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AN  
INQUIRY  
INTO THE  
NATURE AND TREATMENT  
OF THE  
PREVAILING EPIDEMIC,  
CALLED  
SPOTTED FEVER,  
&c. &c.

*IN THREE PARTS.*

BY JOB WILSON, M. B.

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**Be it remembered,**

THAT on this twentieth day of November, A. D. one thousand eight hundred and fifteen, and in the fortieth year of the Independence of the United States of AMERICA, JOB WILSON, M. B. of the said District, hath deposited in this Office the Title of a Book, the right whereof he claims as Author, in the words following ...viz.

“An Inquiry into the Nature and Treatment of the Prevailing Epidemic, called Spotted Fever, &c. &c. In three parts. By Job Wilson, M. B.”

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GEO. W. PRESCOTT,  
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# Introduction.



EVERY candid and experienced physician will doubtless allow, that the practice of physic, at the present time, is in a very unsettled and fluctuating condition. Such a change has happened in the nature and treatment of our diseases within a few years, that in many places, in one half or two thirds of the cases of fever that occur, the physician is without any guide ; he has merely heard something concerning the treatment of this new disease which prevails, or perhaps has read some scrap in the newspaper, or possibly in some periodical publication, relating to the same. In these accounts he finds a great variety of the same disease, occurring in hardly any two places or years alike, with subdivisions into a great number of grades of the same disease ; and these descriptions are from physicians who have different views of the disease, and who consequently recommend different and even opposite modes of treatment. This must tend very much to confuse even experienced and well informed physicians, especially in the first cases which they are called to attend. This is too much the case even at the present day. For these reasons, I have attempted an Inquiry into the Nature and Treatment of that most formidable disease, called Spotted Fever.

It is not because I consider myself better qualified to investigate the nature of this disease than most of my cotemporaries ; but because no one has attended to this important subject.\* Age after age has passed

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\* Many eminent physicians, as Drs. Rush, Mitchell, &c. have done much in elucidating the nature of our epidemics, as will appear from their writings : but the effect which our climate has in producing the diseases of this continent, appears never to have been fairly investigated.

away, and no one has attempted an inquiry into the causes which appear so materially to affect the diseases of this country. That I should live in an age so eventful, and should, to my own conviction, be fully satisfied that the baneful effects which the inhabitants of these States suffer, are principally to be attributed to the vicissitudes of our climate ; and when possessed of the most unquestionable facts (as appears to me) that respect the reality of these particulars ; were I to let these things pass unnoticed or unrecorded, and see the sufferings of my countrymen as I do, it would discover an unpardonable degree of indifference, and want of feeling.

I am aware, that my circumstances in many respects are not the most happy to prosecute this Inquiry ; yet I shall endeavor to give the subject all the attention which the concerns of a young and dependent family, and the almost constant calls of my profession, will allow. Any mistakes which I may commit, or erroneous inductions which it may be my fortune to make, it is hoped that those who have better abilities and more leisure will correct. As to the facts which this work may contain, it is hoped they will be useful in investigating the diseases of our climate, whether I have been fortunate in my inductions or not.

That the climate of all countries has a material effect on most of the diseases which visit them, appears to have been the opinion of physicians from the earliest ages to the present time ; and in respect to epidemics, if not the principal cause, yet doubtless a powerful auxiliary. Dr. Rush, in his account of the climate of Pennsylvania, makes this remark : " From a review of all the facts that have been mentioned, it appears that the climate of Pennsylvania is a compound of most of the climates in the world. Here we have the moisture of Britain in the spring ; the heat of Africa in summer ; the temperature of Italy in June ; the sky of Egypt in autumn ; the cold and snows of Norway, and the ice of Holland, in the

winter ; the tempests (in a degree) of the West-Indies, in every season ; and the variable winds and weather of Great Britain in every month of the year. From this history of the climate of Pennsylvania, it is easy to ascertain what degrees of health, and what diseases, prevail in the State. As we have the climate, so we have the health, and the acute diseases, of all the countries that have been mentioned."

Our climate, (particularly the climate of New-England) though at best very changeable, for many years prior to 1804, has been comparatively mild and steady ; so that the changes of temperature, making allowance for the dryness of our atmosphere, did not so far exceed the changes of the climate of Great Britain as to cause the diseases of this country to be materially different from the diseases of that country, except in some of our large seaport towns. But since 1804; a new era has commenced. The changes of our climate have been greater and more frequent. The effects of these changes have been very remarkable, both in the animal and in the vegetable kingdoms. To many individuals of each of these kingdoms, they have proved immediately fatal ; and their continued devastation is very apparent. In the vegetable kingdom, many plants, which survived the first shock of the cold, or rather sudden changes of temperature, were left in a weak and debilitated state, and have been destroyed, or still further debilitated, by succeeding changes. What little vitality remained after the first year, the changes which happened in the second destroyed, or still further reduced ; and these changes have continued to operate in like manner to the present time.

From the consideration of these facts, this question naturally arises—If the vegetables of our climate, and even those of indigenous origin, suffer so severely by the changes that have happened of late, can the people, who in a degree must be considered



as exotics, escape unhurt ? The fact appears to be, that we likewise feel a lasting effect from these changes ; and though, providentially, we are not as yet thinned quite so much as some of our orchards, yet the mortality, from some cause, has been great. The late changes, or some other cause, have produced a disease, or rather diseases, with which our mother country appears never to have been acquainted, as she never suffered so great and sudden extremes of heat and cold.\*

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\* The sweating sickness, which prevailed in England, and in the north of Europe, some centuries past, appears to have been in some respects similar to the present epidemic.



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*PART FIRST.*

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A

COMPENDIOUS VIEW

OF THE

Climate and Diseases

OF

THESE STATES,

SINCE THEIR FIRST SETTLEMENT IN 1620,  
TO 1806.



A  
**COMPENDIOUS VIEW**

OF

**THE CLIMATE AND DISEASES OF THE  
NEW-ENGLAND STATES,**

FROM THE FIRST ATTEMPT TO ESTABLISH A SET-  
TLEMENT IN 1607, TO 1630.

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\* MAY 31, 1607. The Plymouth company send two ships with one hundred men, George Popham, President, and Capt. Rowley Gilbert, Admiral, to Sagadahock, North Virginia.

Dec. 15. The two ships sail from Sagadahock, with all their company, except forty-five.

A. D. 1608. This winter extremely cold, both in Europe and North America. This spring the colony brake up and return to England. They brand the country exceedingly cold, and not habitable by Englishmen; and the adventurers give over their design of transmitting inhabitants to America.—No

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\* The history of the climate and diseases of New-England, from A. D. 1607 to A. D. 1630, is taken from Prince's New-England Chronology.

death happens during their stay on the continent, except that of their President, Capt. Popham.

A. D. 1616. This winter a plague is said to have destroyed many of the natives of New-England.

A. D. 1617. This winter, and the spring ensuing, a great plague befalls the natives, which wastes them exceedingly; and so many thousands of them die, that the living are not able to bury the dead, whose skulls and bones laid on the ground at the places of their habitations, for several years after.—The Penobscots in the east, and the Narragansets in the west, are said to have escaped this plague.

A. D. 1620. Nov. 9. The first settlers of New-England arrive at Cape Cod.

On the 13th, the water being shallow, they are forced to leave their vessel, and wade a bow-shot or two, before they can reach land. The weather being cold and freezing, they are seized with grievous coughs and colds, which finally caused the death of many among them.

Nov. 15. Capt. Standish, with sixteen men well armed, sets out from the Cape, to find a place convenient for settlement. They come to a pond, where, making a barricado, they take lodgings for the night, it being very rainy; and the next day they are obliged in some places to wade up to their knees in water.

Nov. 27. Thirty-four in number set forth for a more full discovery of the harbor; but the weather growing rough, and the wind cross, they are soon

obliged to row for the nearest shore, and to wade above their knees in water to land. It blows, snows, and freezes all this day and night; and here some receive the seeds of those fatal diseases which quickly seized them. The next day, travelling four or five miles up and down the steep hills, covered half a foot deep with snow, they have to take lodging at night under the pine trees.

Dec. 4. One death happened—The 6th, ditto—The 7th, ditto—The 8th, ditto.

On the 28th of December, twenty of the first planters land to find a convenient place for settlement. They rendezvous this evening; but a storm rising, and it continuing to rain and blow hard all night, and so tempestuous for two days, that they are unable to get aboard, and have nothing to shelter them.—Dec. 21, one death—The 24th, ditto.

A. D. 1621. Jan. 1. One death—The 8th, ditto—The 29th, ditto.

Feb. 21, four deaths—The 25th, one death—and three others in this month.

In March, there are seventeen deaths. We sow our gardens between the 7th and 16th of March.

In the month of April, thirteen of our number die, and in three months half of our company; the greater part in the depth of winter; want of houses, and other comforts, and being infected with the scurvy, and other diseases, which their long voyage and unaccommodate condition brought upon them; so that of one hundred persons scarce fifty remain.

The living are scarce able to bury the dead, and the well not sufficient to attend the sick, there being, in the time of the greatest distress, but six or seven. The like diseases fall also among the sailors, so that almost half their number die before they sail. But the spring advancing, the mortality begins to cease, and the sick and lame recover, which puts new life into the people.

Some time between the 5th of April and the 12th of May, Governor Carver dies. He returns from the field sick, complaining greatly of his head, and in a few hours his senses failing, he spake no more, and expired in a few days.

July 2. We send Mr. Edward Winslow, and Mr. Stephen Hopkins, with Squanto, a native, to see our new friend Masassoit, at Pakanokit, and bestow some favors upon him, to bind him the faster to us, to take a view of his country, and see how and where he lived, his strength, &c. After travelling about twenty-three miles, we arrive at the river, where Masassoit lives. On this river there are and have been many towns. The land is very good on both sides, and for the most part cleared. Thousands, who lived here, died of the great plague, which raged in these parts about three years before our arrival. The living were unable to bury the dead, and their skulls and bones appear in many places, where their dwellings had formerly been. Next morning we travel six miles farther up the river ; we find few places on it but what had been



inhabited, though now greatly wasted by the plague aforesaid.

A. D. 1622, in November or December, the Governor, with Squanto and others, go to Mananough to buy corn of the natives. Here Squanto falls sick of a fever, and bleeding much at the nose, which the Indians reckon a fatal symptom, dies in a few days — Thence they sailed to Massachusetts, find a great sickness among the natives, not unlike the plague, if not the same.

A. D. 1623, January, the Governor with another company went to Namasket, bought corn there, where a great sickness rising among the natives, our people brought it home.\*

March, a conspiracy being discovered, the Plymouth company engaged and killed several of the natives. This action so amazed the Indians, that they forsook their houses, ran to and fro, living in swamps, &c. which brought on them sundry diseases, whereof many died ; as<sup>l</sup> Cannacum, sachem of Manamet ; Aspinet, sachem of Nawset ; Ipanough, sachem of Matachiest ; and many others were still daily dying among them.

April, we began to set our corn, the setting season being good till the latter end of May.

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\* The above history mentions the weather as being extremely cold, and stormy : and the people being exposed to all its inclemency, lying on the ground, &c. probably was the cause of their sickness.

A. D. 1629. This year, [probably some time in the winter or spring] it being sickly at Naumkeag, and Mr. Endicot hearing that we at Plymouth have a very skilful doctor, Mr. Fuller, well skilled in the diseases of the country, with which the people at Naumkeag were filled, applies to our Governor for him, who forthwith sends him to their assistance. It appears from Governor Dudley's writings, that there was a great mortality among the English in Massachusetts colony, in the winter of 1629 and 1630. Eighty of the Massachusetts colony die during the winter of 1630.

June 14. The *Arabella*, an Admiral ship of the New-England fleet, arrives at Salem. The passengers go on shore, and find the colony in an unexpected and sad condition; above eighty of them dying the winter before, and many of those alive weak and sick.\*

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FROM 1630 to 1793, which makes a period of 163 years, we have no account of any extensive and wasting epidemic, or at least I have no knowledge of any. It appears that, during this long interval, the cause or causes which produce the epidemics of our climate were kept within such bounds, as only to produce the milder forms of those diseases which of late have proved so fatal to thousands

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\* The number of the inhabitants, before the sickness, appears to have been one hundred and eighty.



of our countrymen, viz. catarrhs, quinsies, pleurisies, peripneumonies, &c. On the other extreme, typhus and bilious fevers; and occasionally, perhaps from accidents co-operating with those causes, very fatal diseases have happened; but their operation was not extensive, nor of long continuance. A description of some of those milder epidemics may however be proper.

As the city of Philadelphia was first visited with the malignant or yellow fever, which happened in 1793, the history of the bilious remitting fever, which visited that city in 1780, may on some accounts be acceptable. Doctor Rush, in his Medical Inquiries, Vol. I. page 115, makes the following remarks on this disease: "The spring of 1780 was dry and cool; a catarrh appeared among children between one and seven years of age. It was accompanied by a defluxion from the eyes and nose, and by a cough and dyspnœa resembling in some instances the cynanchea trachealis, and in others the peripneumony. A few patients expectorated blood. Some had swellings behind their ears, and others were afflicted with small ulcers in the throat. I met with only one case in this fever, in which the pulse indicated bleeding. The rest yielded in a few days to emetics, blisters, and bark.

An intermittent prevailed among adults in the month of May. July and August were uncommonly warm. The mercury stood on the 6th of Aug. at  $94^{\circ}\frac{1}{2}$ ; on the 15th of the same month at  $95^{\circ}$ ;

and for several days afterwards at 90°. Many laboring people perished during this month by the heat, and by drinking not only cold water, but cold liquors of several kinds, while they were under the violent impression of heat. The vomiting and purging prevailed universally during these warm months among the children; and with an uncommon degree of mortality. Children from one to eight and nine years old were likewise very generally affected by blotches and little biles, especially in their faces. An eruption on the skin, called by the common people the prickly heat, was very common at this time among persons of all ages. The winds during these months blew principally from the south and south-west, of course they passed over the lands which lie between the city and the conflux of the rivers Delaware and Skuykill. The dock and the streets of Philadelphia supplied the winds at this season likewise with a portion of their unwholesome exhalations.

The remitting fever made its first appearance in July and August; but its symptoms were so mild, and its extent so confined, that it excited no apprehensions of its subsequent more general prevalence throughout the city.

On the 19th of August, the air became suddenly very cool. Many hundred people in the city complained the next day of different degrees of indisposition; from a sense of lassitude to a fever of the remitting type. This was the signal of the

epidemic; the weather continued cool during the remaining part of the month, and during the whole month of September.—Intemperance in eating or drinking, riding in the sun or rain, watching, fatigue, or even a fright, but more frequently a cold, all served to excite the seeds of this fever into action wherever they existed. All ages, of both sexes, were affected by this disease. Seven of the practitioners of physic were confined by it nearly at the same time. The city, during the prevalence of the fever, was filled with an unusual number of strangers, many of whom were affected by it, particularly the *Friends*, whose yearly meeting was held in the month of September.

This fever generally came on with rigor, but seldom with a regular chilly fit, and oftener without any sensation of cold. A giddiness in the head was the forerunner of the disease in some people. This giddiness in several instances attacked so suddenly as to produce a faintness, and even symptoms of apoplexy. In some persons this fever was introduced by a slight sore throat, and in others by a hoarseness, which was mistaken for a common cold. It was remarkable, that all those persons who were affected in this violent manner, recovered in two or three days.

(See the foregoing account, in Vol. I. page 151, &c.)

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AN ACCOUNT OF THE SCARLATINA ANGINOSA,  
*as it appeared in Philadelphia, in 1783 and 1784.*

THE following account of this disease is taken from Doctor B. Rush's Medical Inquiries, Vol. I. page 137.

The beginning of the month of July was unusually cool, insomuch that the mercury in Fahrenheit's thermometer stood at 61 in the day time, and fires were very comfortable, especially in the evening. In the last week but one of this month, the weather suddenly became so warm that the mercury rose to  $94\frac{1}{2}$ , at which it remained for three days. As this heat was accompanied by no breeze from any quarter, the sense of it was extremely distressing to many people. Upwards of twenty persons died in the course of those three days, from the excess of the heat, and from drinking cold water. This extreme heat was succeeded by cool weather, the mercury having fallen to 60; and the month closed with producing a few intermitting and remitting fevers, together with several cases of inflammatory angina.

The weather in the month of August was extremely variable; the mercury, after standing for several days at 92, suddenly fell so low as not only to render fires necessary, but in many places to produce frost. Every form of fever made its appearance in this month. Towards the close of the month, the scarlatina made its appearance, chiefly among children.

The month of September was cool and dry, and the scarlatina anginosa became epidemic among adults. In most of the patients who were affected by it, it came on with a chilliness, and a sickness at the stomach, or vomiting, which case was so invariably present, that it was with me a pathognomonic sign of the disease. The matter discharged from the stomach was always bile. The swelling of the throat was in some instances so great as to produce a difficulty of speaking, swallowing, and breathing. In a few instances, the speech was accompanied by a squeaking voice, resembling that which attends the cynanche trachealis. The ulcers on the tonsils were deep, and covered with white, and in some instances with black sloughs. In several instances there was a discharge of thick mucus from the nose from the beginning; but it oftener occurred towards the decline of the disease, which most frequently happened on the fifth day. The disease frequently went off with a swelling of the hands and feet; in some instances they complained of acute pain in their limbs, resembling rheumatism.

Between the degrees of the disease which I have described, there were many intermediate degrees of indisposition which belonged to this disease. I saw in several cases a discharge from behind the ears, and from the nose, with a slight eruption, and no sore throat. All these patients were able to sit up, and walk about. In some, a pain in the jaw, with



swellings behind the ears, and a slight fever, constituted the whole disease. In one case the disease came on with a coma; and in several patients it went off with this symptom. A few instances occurred of adults who walked about, and even transacted business, until a few hours before they died.—Such was the predominance of the scarlatina anginosa, that many hundred people complained of sore throats, without any other symptom of indisposition. The slightest occasional or exciting cause, and particularly cold, seldom failed of producing the disease.

The scarlatina anginosa was epidemic in the State of New-Hampshire, and probably throughout the New-England States.



*Extracts from Dr. RUSH's Account of the Climate of Pennsylvania, in 1788.*

[See *Medical Inquiries*, Vol. I. page 84.]

THE mercury fell from 37 to  $4\frac{1}{2}$  below 0 in four and twenty hours, between the 4th and 5th of February, 1788. In this season, nature seems to play at cross purposes. (Page 98.) The summer of 1788 affords a remarkable instance of excess in the quantity of rain. Thirteen days are marked with rain in July. There fell, on the 18th and 19th of August, seven inches of rain in the city of Philadelphia. The wheat suffered greatly by the constant rains in July, in the eastern and

middle parts of the State. So unproductive a harvest in grain from wet weather had not been known, it is said, in the course of the last seventy years. The heat of the air, during these summer months, was very moderate. Its mean temperature at Spring-Mill was 67,8 in June, 74,7 in July, and only 70,6 in August. (Page 110). On the fifth of February, 1788, many people were affected by the violence of the cold. It produced a violent pain in the head; and in one instance a sickness at the stomach, and vomiting, appeared to be the consequence of it.

*Extracts from Dr. RUSH's Medical Inquiries, Vol. II.  
page 337.*

THE weather in December, 1788, and in January, 1789, was variable, but seldom very cold. On the 1st of February, 1789, at 6 o'clock in the morning, the mercury in Fahrenheit's thermometer fell 5 below 0, in the city of Philadelphia. At 20 miles from the city, on the Skuylkill, it fell 12 below 0, at the same hour. On the 19th and 20th of this month, there fell about eight or ten inches of snow. On the 23d, 24th, 25th, and 27th, the weather was very cold. The mercury fluctuated during these days between 4 and 10 above 0.

In the intervals between these cold days, the weather frequently moderated so that the Delaware was frozen and thawed not less than four times. It was not navigable till the 8th of March. There were

in all, during the winter and month of March, sixteen distinct falls of snow. In April and May there were a few warm days ; but upon the whole it was a very cold and backward spring ; the peaches failed almost universally. There were no strawberries on the 24th of May. It was uncomfortable to sit without a fire till the first of June.

*Extracts from Dr. RUSH's Account of the Influenza, as it appeared in Philadelphia, in 1789, 1790, and 1791.*

THE latter end of the month of August, in the summer of 1789, was so very cool that fires became agreeable. The month of September was cool, dry, and pleasant. During the whole of this month, and for some days before it began, and after it ended, there had been no rain. In the beginning of October, a number of the members of the first Congress, that had assembled in New York under the present National Government, arrived in Philadelphia, much indisposed with colds. They ascribed them to the fatigue, and night airs, to which they had been exposed in travelling in the public stages ; but from the number of persons who were affected, from the uniformity of their complaints, and from the rapidity with which it spread through our city, it soon became evident that it was the disease so well known of late years by the name of the Influenza.

The symptoms which ushered in this disease were generally a hoarseness, a sore throat, and a



sense of weariness, chills, and a fever. After the disease was formed, it affected more or less the following parts of the body. Many complained of acute pains in the head; these pains were frequently fixed between the eye-balls; and in three cases, which came under my notice, they were terminated by abscesses in the frontal sinus, which discharged themselves through the nose: the pain in one of the cases, before the rupture of the abscess, was so exquisite that my patient informed me he felt as if he should lose his reason. Many complained of great itching in the eyelids. In some, the eyelids were swelled; in others, a copious effusion of water took place from the eyes; and in a few there was a true ophthalmia. Many complained of great pains in one ear; and some, of pains in both ears. In some, these pains terminated in abscesses, which discharged for some days a bloody or purulent matter: in others, there was a swelling behind each ear, without a suppuration.

Sneezing was a universal symptom. In some, it occurred not less than fifty times in a day: the matter discharged from the nose was so acrid as to inflame the nostrils and the upper lip in such a manner as to bring on swellings, sores, and scabs, in many people. In some, the nose discharged drops; and in a few instances, streams of blood. In many cases, it was so much obstructed as to render breathing through it difficult, In some, there was a total

defect of taste : in others, there was a bad taste in the mouth    in some, there was a want of appetite : in others, it was perfectly natural. Some complained of a soreness in their mouths, as if they had been inflamed by holding pepper in them ; some had swelled jaws ; and many complained of the tooth-ache. I saw only one case, in which the disease produced a coma. Many were affected with pains in the breast and sides. A difficulty in breathing attended in some ; and a cough was universal. Sometimes this cough alternated with a pain in the head ; sometimes it preceded this pain, and sometimes it followed it.—It was at all times distressing. In some instances it resembled the chin-cough : one person expired in a fit of coughing ; and many persons spat blood in consequence of its violence. I saw several patients in whom the disease affected the trachea, chiefly producing great difficulty of breathing ; and in one case a suppression of the voice : and I heard of another, in which the disease, by falling on the trachea, produced a *cynanchea trachealis*. In most of the cases which terminated fatally, the patients died of *pneumonia notha*. The stomach was sometimes affected by nausea and vomiting ; but this was far from being a universal symptom. I met with four cases, in which the whole force of the disease fell upon the bowels, and went off in a diarrhoea ; but in general the bowels were regular, or costive. The limbs were affected with such acute pains, as to be mistaken for the rheumatism. The

pains were most acute in the back and side. Profuse sweats appeared in many over the whole body in the beginning, without affording any relief. It was in some instances accompanied by erysipelatous, and in four cases, which came to my knowledge, it was followed by miliaria eruptions.

The pulse was sometimes tense and quick, but seldom full. In a great majority of those whom I visited, it was quick, weak, and soft. There was no appearance in the urine different from what is common in all fevers. The disease had evident remissions, and the fever seldom continued above three or four days ; but the cough, and some other troublesome symptoms, sometimes continued two or three weeks.

In a few persons, the fever terminated in a tedious and dangerous typhus. It affected adults of both sexes alike. A few old people escaped it. It passed by children under eight years old, with few exceptions. Out of thirty-five maniacs in Pennsylvania hospital, but three were affected by it. No profession or occupation escaped it. Even previous and existing diseases did not protect the patient from it. It was remarkable, that persons who worked in the open air, such as sailors, and long-shore-men, had it much worse than tradesmen who worked within doors. A body of surveyors in the eastern woods of Pennsylvania suffered extremely from it. It attacked the Indians in the neighborhood of Niagara with such peculiar force,

that they ascribed it to witchcraft. Many people, who had recovered, were afflicted a second time with all the symptoms of this disease. Many thousand people had this disease, who were not confined to their houses. A few persons, who were exposed to the disease, escaped it ; and some had it so lightly as scarce to be sensible of it. It proved fatal (with few exceptions) only to old people, and to persons who had been previously debilitated by consumptive complaints. It likewise carried off several hard drinkers.—It was not wholly confined to the human species.

The following winter was unusually mild, inso-much that the navigation of the Delaware was not interrupted during the whole season, only from the 7th to the 24th of February. The weather on the 3d and 4th days of March was very cold ; and on the 8th and 9th days of the same month, the mercury stood at 4, at seven o'clock in the morning. On the 10th and 11th there fell a deep snow. The weather during the remaining part of the month was cold, rainy, and variable. It continued to be variable during the month of April. About the middle of the month there fell an unusual quantity of rain. Several pleurisies appeared during this month ; also a few cases of measles.

In the last week in this month the influenza made its appearance. It was brought from New-England, and affected in its course all the intermediate States. Its symptoms were nearly the

same that they were in the preceding autumn; but in many people it put on some new appearances. Several persons, who were affected by it, had symptoms of madness. Some had no cough, but very acute pains in the back and head. It was remarked, that those who had the disease chiefly in the breast the last year, complained now chiefly of their heads; while those whose heads were affected formerly, complained now chiefly of their breasts. In many, it put on the type of an intermitting fever. Several complained of constant chills or constant sweats; and some were much alarmed by an uncommon blue and dark color in their hands. I saw one case of ischuria, another of acute pain in the rectum, a third an anasarca, and a fourth of a palsy in the tongue and arms; all of which appeared to be anomalous symptoms of the influenza. Pain in the eye-balls was a universal symptom: some had pain in one eye only; and a few had sore eyes, and swellings in the face. A person informed me that he had no other symptom of the disease than an efflorescence on his skin, and a large swelling in his groin, which terminated in an abscess.

The prisoners, who had it in the autumn, escaped it this spring. It declined sensibly about the first week in June; and after the 12th, I was not called to a single patient. The convalescence from it was very slow, and a general languor appeared to pervade the citizens for several weeks after it left the city.



The month of December, 1791, was extremely and uniformly cold. In the beginning of the month of January, 1792, the weather moderated, and continued to be pleasant till the 17th, on which day the navigation of the Delaware, which had been completely obstructed by the ice, was opened. During the month of December, many people complained of colds; but they were ascribed wholly to the weather. In January, four or five persons in a family were affected by colds at the same time, which created a suspicion of the return of the influenza. This suspicion was soon confirmed.

In the treatment of the influenza, Dr. Rush observes, that he was governed by the state of the pulse. Where inflammatory diathesis discovered itself, by a full, tense pulse, or where great difficulty of breathing occurred, and the pulse was low and weak in the beginning of the disease, he ordered moderate bleeding. In a few cases, when symptoms of pneumony attended, bleeding was repeated once with advantage. In all these instances of inflammatory affection, he gave the usual antiphlogistic medicines; he found that vomits did not terminate the disease as they often do a common catarrh.

In cases where no inflammatory action appeared in the system, he prescribed cordial drinks and diet, and forbade every kind of evacuation. He observes, that he used bleeding in several cases, on the second, third, and fourth days of the disease, where it had

appeared to be improper in the first stage of the disease. He mentions two cases of alarming syncope after the loss of ten ounces of blood, and one instance of death in half an hour after this evacuation.

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## REMARKS ON THE YELLOW FEVER.

FROM about 1792 to 1804, a period of about 12 years, the winters, with few exceptions, appear to have been shorter and milder than the preceding winters were, and the summers longer and hotter than those of former years; and a corresponding difference in our diseases appears to have happened in consequence.

The next disease, which occurs in the history of our climate, as a wasting and extensive epidemic, is the yellow fever; and although it has, at different times prior to this period, occurred in some of our most southern States; yet the period, which marks its prevalence as an alarming and extensive epidemic, is the year 1793; at which time it raged in the city of Philadelphia; and since has prevailed more or less in most of the States, until about 1806 and 1807; since which time, it has been but little known as a deadly and wasting disease. What appears very remarkable, in the history of this epidemic, is, that the seasons, which are favorable to the prevalence of the spotted fever, appear to have been unfavorable to the production of this disease.

As the yellow fever appears to have been in consequence of long continued and great heat, which perhaps was increased in our cities by the air being obstructed by the houses, and from the reflection of heat by the same ; the long continuance of great heat must in such situations greatly vitiate the air when confined : and by the noxious exhalations that must necessarily be produced when materials exist in sufficient quantity for their production, it would be strange indeed if these causes, abounding as they have, should not produce some alarming disease.

Since the nature of the yellow fever has been better understood, great attention has been paid to have all those substances removed, which produce, when acted on by heat, noxious exhalations ; and it has doubtless had an important effect in mitigating the disease ; but the shortness and coolness of our summers appear to have been the principal cause of preventing this disease.



## AN ACCOUNT OF THE WEATHER *in 1804 and 1805.*

ON the 8th of October, 1804, a new era appears to have commenced. On this day a most tremendous snow storm happened, the depth of which is said to have been two feet in many places ; and more or less was to be seen for several days.



The first permanent snow did not happen till near the 20th of December; but the quantity of snow that fell from this time to about the middle of February, 1805, was immense. In Canada it is said to have been seven feet deep; in this State four feet; in the city of Philadelphia two feet. It is said to have been the coldest winter that has happened since the year 1780. The mercury in Fahrenheit's thermometer stood for many days at 4 and 6 degrees above 0 in the city of Philadelphia. At Norfolk in Virginia the mercury stood at 18 above 0 on the 22d of January; at Lexington in Kentucky, it stood at 0 on the 21st. During this intense cold, many persons are said to have perished. And such was the collection of ice in the northern seas, as to cover it, so far as to render navigation dangerous, from the 41st to the 46th degree of latitude, and from the 44th to the 56th degree of longitude. The spring and first summer months were unusually cool.

[See *Rush's Medical Inquiries*, vol. I. page 79—and  
*New-York Med. Repository*, vol. IV. hex. 2. p. 228.]

# A Synoptical View of the Weather and Diseases, from Feb. 18, 1806, to Feb. 18, 1807.

	Of the nights.	Mean temperature of days.	Of the nights	Difference of temperature between days and nights.	Mean temperature of days & nights.	Greatest degree of heat.	Lowest degree of heat.	Greatest variation in 24 hours.	Number of fair days.	Number of foul days.	Number of snowy days.	Number of rainy days.	Number of cloudy days.	Number of squally days.	Winds which prevailed.						Diseases which prevailed.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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*A SUCCINCT ACCOUNT OF THE WEATHER  
AND DISEASES IN THE YEAR 1806.*

THIS year I conceive to have been rather more changeable than former years have been, when compared with succeeding years; it was comparatively mild and temperate. The range of the thermometer was  $104^{\circ}$ ; the mean annual temperature 46,5; the greatest heat 91; the mean difference of temperature between the days and nights was 16,5; the greatest variation in 24 hours, 38. The ten last days in February were uncommonly warm; the mean temperature of the days, as seen in the table, was 41, and the nights 28. On the 26th day, the mercury fell suddenly from 40 to 12, at night; and rose the next day to 50. These considerable variations of temperature appeared, with other concurring circumstances, to produce several cases of rheumatism, inflammatory fever, inflammation of the membranes of the brain, &c. erysipelas, &c. which continued to be more or less frequent until the commencement of summer. The countenance in the above diseases wore a deep blush, the face moderately swollen, the lips of a bright lively red; the pulse full, hard, and strong; the temperature of the body considerably increased.

The cases, which I saw of the above diseases, were in general mild, were readily subdued by bleeding, cathartics, and other depleting means. In the months of June and July, but few fell sick. August, September, and October, were dry, and the changes

of temperature, as seen in the table, were considerable. Dysentery, cholera morbus, and bilious fever, were the prevailing diseases. This fever might be considered as a form of synochus; it was in general successfully treated, by phlebotomy, at the commencement, a cathartic, and afterwards an emetic, followed by gentle mercurial cathartics, blisters, &c.



*A Synoptical View of the Weather and Diseases, from  
February 1, 1807, to February 1, 1808.*

	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Result
Total heat of the days.	770	1526	1729	1993	2290	2557	2425	2058	1706	1003	1090	753	20900
Total heat of the nights	239	480	948	1221	1636	1941	1963	1521	1227	788	738	468	13170
Mean temperature of the days.	27	49	57	64	76	82	78	68	55	33	35	24	53
Of the nights.	8	15	31	39	54	62	63	50	39	26	33	15	36
Difference of temperature betw. da's & nts	19	34	26	25	22	20	15	18	16	7	12	9	21
Mean temperature of the days and nights.	17,5	32	44	51,5	65	72	70,5	59	47	29,5	29	19,5	46
Greatest deg. of heat.	54	69	78	79	89	89	90	78	76	46	49	43	69
Lowest deg. of heat.	7*	7*	9	31	44	47	49	41	27	15	4	37	7*
Greatest vari. in 24 h.	39	53	55	38	31	28	37	24	33	22	31	22	55
Number of fair days.	20	24	21	21	20	19	15	23	29	23	18	22	25
Number of foul days.	8	7	9	10	10	12	16	7	2	7	13	9	11
Number of snowy days	3	5	1	1	0	0	0	0	0	0	3	4	24
Number of rainy days	1	0	6	9	9	12	15	7	2	3	2	3	69
Number of cloudy days	1	2	1	0	1	0	1	0	0	0	4	2	12
No. of squally days.	3	0	1	0	0	0	0	0	0	1	0	0	5
North-west.	20	25	16	15	12	12	14	26	28	19	14	9	21
North-east.	4	2	2	1	2	4	2	0	2	5	4	5	33
South-east.	1	2	4	2	1	7	4	0	0	1	0	1	23
South-west.	0	0	1	0	2	1	1	4	1	1	2	3	27
North.	3	0	0	1	5	1	0	0	0	4	4	3	21
East.	0	2	2	1	1	0	0	0	0	0	4	3	18
South.	0	0	5	6	4	1	0	0	0	0	3	7	33
West.	0	0	0	0	0	0	0	0	0	0	0	0	0

*Direction of the wind.*

The diseases which prevailed in the above months were as follows—February, otalgia—March, pleurisy—April, pleurisy—May, pneumonia—June, cephalalgia—July, cholera—August, influenza—September, influenza—October, synocha—Nov. pleurisy—Dec. synocha—Jan. synocha.

\* Below 0.



*A Succinct Account of the Weather and Diseases in  
1807 and 1808.*

THIS year is of a medium temperature with the others in the journal, viz. 46,6; and the range of the thermometer is 97, which is the least of any year mentioned in the tables. The mean variation in the months of February,\* March, and April, are 35, 36, and 34; but in this year they are 39, 53, 55: as likewise by noticing said tables you will perceive that the diurnal variations are comparatively great, which great changes of temperature we should readily conclude would produce violent diseases, which indeed we find has been the case. In the months of February and March inflammatory diseases were frequent, viz. abscesses, violent inflammations of the head, affecting one side more than the other; the pain was more acute over one eye in the frontal sinus, or in the antrum-highmorianum or teeth, than elsewhere. During the months of March and April a pleurisy of a more violent kind than usual prevailed, but was readily relieved by blood-letting, cathartics, blisters, &c. as were likewise the other diseases which accompanied it. May, June, and July, were more healthy; yet occasionally the above diseases were noticed in May, but by the first of June they had pretty generally ceased.

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\* On the 26th of February, 1807, there was a great fall of rain, which inundated the low lands throughout a considerable part of this continent. This rain was immediately followed by extreme cold weather, and this by diseases, as will appear by the history of the weather and diseases of this month.

August, September, and October—The first of these months, it will be seen by the table, was very changeable. The vibrations were great and frequent. The greatest mean variation (for these intemperate seasons) for the month of August, as marked in the table, is 28; but in the present year it is 37. The atmosphere was uncommonly moist, and the sense of cold consequently far below that which was indicated by the thermometer. The number of rainy days were fifteen. This extreme moisture of the atmosphere must have caused the changes of temperature to have operated much more powerfully than they otherwise would have done.

Early in this month the influenza made its appearance, and continued with but little intermission till the first of October. Its symptoms were, lassitude, cold and long continued shiverings, or a more than usual sensibility to cold, a discharge of mucus from the nose and eyes, attended with more or less sneezing, pain in the head, generally over one eye, more or less cough, the breathing a little obstructed and hurried, with occasional pain in the side or back, and a soreness which appeared to be in the internal capillaries immediately in contact with the bones. The sick, when exposed, were liable to a relapse, which was often more severe than the original disease. The pulse was full, strong, rather frequent, and hard; but sometimes soft. The first attack was often severe, but seldom fatal; the severity of the disease generally abated in less than 72 hours from

the first attack; bleeding appeared to have a good effect—the head-ache, and other violent pains, immediately abating on this operation being performed. Cold applications, such as cloths wet in a solution of *fac. saturni* in water or vinegar, and applied to the head, &c. gave in general great relief. Cathartics, nauseating doses of emetics, epispastics, and diaphoretics, were of advantage in the most violent cases.

About the 1st of October the disease lost its most characteristic symptom, viz. a discharge of mucus from the nose, and was succeeded by inflammatory fever, varying in its duration, from one day to seven, eight, and nine, attended with cough, pain in the head, and other symptoms which appeared to partake of the nature of influenza. Several severe cases of pleurisy likewise appeared in this month, which is with us uncommon.

November was comparatively temperate, and the vibrations of temperature not great, or frequent; yet several new cases happened; but all on the stormy days, or immediately after, except one. One singular case of fever occurred, in this month, attended with coma and hemiplegia; in other respects it was similar to the prevailing epidemic.

The above diseases continued to prevail through December, which was the unhealthiest month for December that I recollect ever to have seen.

*A Synoptical View of the Weather and Diseases, from  
February 1, 1808, to February 1, 1809.*

	Febr.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Result
Total heat of the days.	907	1521	1606	1862	2357	2463	2374	2135	1489	1200	858	644	19216
Total heat of the nights	647	884	1171	1509	1892	2091	1973	1629	1209	1004	657	336	15002
Mean temperature of the days.	22	23	29	50	63	67	63	54	39	33	21	10	8,41
Of the nights.	9	14	14	10	15	12	13	17	9	7	6	10	9,11
Difference of temperature betw. da's & nts	26	35	46	55	70	73	69	32	43	36	24	15	3,46
Mean temperature of the days and nights.	52	56	78	76	90	92	90	82	58	60	45	32	7,92
Greatest aeg. of heat.	1	10	20	34	50	56	40	32	29	20	16	13	43
Lowest deg. of heat.	32	22	29	31	32	26	32	23	22	20	14	23	228
Greatest vari. in 24h.	16	23	17	15	22	17	23	22	20	15	14	23	138
Number of fair days.	13	8	13	16	13	13	8	8	11	15	17	8	30
Number of foul days.	8	4	2	0	0	0	0	0	0	3	6	1	61
Number of snowy days	1	1	9	9	7	2	3	4	0	5	3	1	36
Number of rainy days	3	3	1	1	0	0	0	0	0	4	4	1	11
Number of cloudy days	1	0	1	1	0	0	0	0	0	4	4	1	18
No. of squalls, days.	11	17	11	11	11	10	12	26	21	18	10	25	229
North-west.	1	1	1	1	1	1	1	1	1	1	1	1	1
North-east.	3	7	5	1	3	8	0	0	0	0	0	0	18
South-east.	6	0	7	1	1	1	1	1	1	1	1	1	1
South-west.	0	0	0	7	1	2	0	0	0	0	0	0	16
North.	4	1	1	1	1	1	1	1	1	1	1	1	32
East.	4	4	1	1	1	1	1	1	1	1	1	1	25
South.	0	0	0	0	0	0	0	0	0	0	0	0	3
West.	0	0	0	0	0	0	0	0	0	0	0	0	3
Diseases which prevailed.	Cynocha	Pleurisy	Pleurisy	Cephaloe	Cholic	Bitious	Synocha	Synocha	Typhus	Scintalgia	Synocha	Synocha	Synocha

\* Below 0.



*A Succinct Account of the Weather and Diseases of  
1808 and 1809.*

THE months of February, March, and April, as appears by the table, were mild and temperate for the season ; the variations for the present year may be considered moderate. The unfavorable circumstances, as respects the healthy state of the weather during these months, were a rain storm, which happened on the first of February, and eight days of south and thirteen days of south-west wind, which happened in February and March.

In the month of January, 1808, several cases of abscesses occurred, affecting various parts, viz. the limbs, ears, throat, &c. In the last of February and the first of March, an extremely chilly wind blew for several days from the south, during which time several alarming cases of pleurisy, hemicrania, inflammation of the eyes, teeth, &c. occurred ; one severe case of croup happened at this time. Phlebotomy had an excellent effect in the abovementioned cases, and so likewise had cathartics, expectorants, emetics, and blisters, in some of them.

The months of May, June, and July, were not remarkable for changes ; though in June the changes were rather greater than usually happen in that month. No remarkable diseases occurred during these months, except a few cases of bilious fever.

August, September, and October—these months were not remarkable for any sudden changes of temperature, or any diseases which occurred in them, except October, which was wetter than that



month usually is ; and, as is seen by the table, suffered greater changes than is usual. In this month the typhus mition was frequent.

November, December, and January, were not remarkable for the prevalence of any disease, or variation of temperature.

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*Account of the INFLUENZA, which happened in Portsmouth, New-Hampshire, in the year 1807.*

By LYMAN SPALDING, M. D.

[See *Medical Repository*, Vol. V. Hex. 2. page 311.]

PORTSMOUTH, the capital of the State of New-Hampshire, is situated in  $43^{\circ} 5'$  north latitude, and  $6^{\circ} 26'$  east longitude from Washington, and contains about 7000 inhabitants. On the 23d of January, at sunrise, the thermometer was 10 deg., on the 26th 13 deg. below Zero ; the coldest weather ever recorded in this town.\* By eight o'clock on those days, the town was completely filled with an intensely thick fog or vapour from the Piscataqua river, so as to render it almost impossible to see across the streets. A severe rain storm immediately followed each of those days. Between the 23d and the 26th, the influenza made its appearance ; and after visiting almost every family in town, subsided early in May.

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\* 1807, January 23, the thermometer at this place, (Salisbury, New-Hampshire, latitude  $43^{\circ} 20'$  north) at sunrise, was  $5^{\circ}$  below 0 ; the weather was hazy, and the wind south-east : on the 26th,  $13^{\circ} 5'$  below 0 ; the weather squally, the wind north-west.

About the middle of August, the influenza made its second appearance, which was more severe than the first, sparing none, not even those who suffered the most in the former attack. After destroying a few, and predisposing many to consumption, it disappeared in December. The mild typhus fever appeared in October, and prevailed through the year.

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*Warm Day at Northampton, Massachusetts.*

ON the evening of the 27th ult. the wind shifted suddenly from a southerly to a south-western point, and blew most violently chief of the night. As soon as the wind shifted, a very uncommon heat of the air was sensibly felt, so very warm, that opening a door of a room where there was a good fire, the air abroad was much warmer than in the room, and occasioned a sensation very similar to the effect of the heat of an oven, or the blast of a furnace.

[*Northampton paper, Dec. 2, 1807.*]

The 27th of November, 1807, stands marked on the journal for that month, 45°. The wind at this place, (Salisbury, New-Hampshire) had been east; it had been rainy, and the wind probably veered round from the east to the north-west: there is no mention made in my journal of its being south, or south-west, on that day.

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*Facts concerning the Winter of 1806 and 1807, and the Spring of 1807, at Albany, State of New-York.*

(*See Med. Repos. Vol. IV. Hex. 2. page 104.*)

THE season (the winter and spring) has been extraordinary, on account of its sudden changes

from extreme cold to moderate weather, with frequent snows, which were soon taken off by rain, or a warm sun, on account of the frequent recurrence of violent gales of wind, which sometimes would continue without intermission for sixty hours, with a cloudy atmosphere; at other times, for eighteen or twenty-four hours, the air perfectly clear, and always in a direction from south-west to north-west, but generally from south-west to west, on account of the remarkable freshets or floods that occurred in the month of February, in different parts of all the New-England States, Vermont, part of this State, and some of the southern States, sweeping away mills and bridges, and inundating the flat lands near to the rivers. The coldest day experienced here was February 9th, when the mercury, at sunrise, stood at 20 below 0: it may be truly said, that this was the coldest weather ever experienced in Albany. On the same morning, at sunrise, the mercury at Augusta, Maine, stood at 34 below 0, or 65 below the freezing point, which is nearly equal to the Greenland atmosphere, and probably never experienced before in the limits of the United States.

On the 31st of March, a violent snow storm set in with heavy winds, which moderated a little on the 1st of April, and increased in violence on the 2d; from which time to the 5th the wind blew a gale from the south-west; the snow lay about three feet deep, with severe cold weather; but it soon grew warmer, and the snow melted gradually away.—It

has been conjectured, that some late singular junction of the planets, particularly the total eclipse of the sun, which occurred last June, has produced these extraordinary changes in the earth.

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*History of the Influenza, as it appeared in New-York City, in the year 1807. By Shadrach Ricketson, Physician in New-York. Published in the Med. Repos. Vol. VI. Hex. 2.*

THIS disease has prevailed, in North-America, many times prior to 1807, particularly in 1733, 1737, 1747, 1756, 1757, 1761, 1772, 1781, 1789, and 1790; but at no time within my recollection has it prevailed so generally and so severely as in 1789 and 1807. Before describing the history and symptoms of this disease, it may not be improper to observe the state of the weather during the two last summer months in which it appeared. This cannot be done better than by recurring to the meteorological tables of that time, from which it will appear, that a great deal of rain had fallen, and that although the weather had been hotter than that of the preceding summer, yet there had been two remarkable transitions to a cool state of the air, viz. in the evening of the 28th of the second summer month, and on the 22d of the last. Indeed some judged that the former sudden change was the cause of the disease; but a few cases were observed nearly two weeks before that time. It might, however, have aggravated it; for it was remarked to increase in



severity, and to spread rapidly soon afterwards, so that in eight, ten, or twelve days, it was at its height.

It being usual, in recording the histories of epidemic diseases, to mention such disorders as immediately precede, accompany, or follow them, it may be proper to observe, that a violent species of ophthalmia prevailed somewhat generally before it. This affection of the eyes, though it was sudden and severe, and produced in some instances an immediate suffusion of the adnata, yielded mostly to the usual remedies. Some cases of this complaint continued after the appearance of the influenza; but it did not secure the system against the latter; for some had both. Some instances of the influenza occurred as early as the middle of the second summer month; but it did not become general till about the first of the next, when it increased so rapidly that in a few days it was judged that nearly one half of the citizens were affected with it. It spared neither age nor sex, though more children escaped it than adults, and I think fewer women were violently affected than men. It was most severe with people whose situation or occupation exposed them to the inclemencies of the weather. These suffered most frequently from relapses.

It is estimated that three-fourths of the inhabitants had, sooner or later, more or less of the disease; but although it was so general, it rarely proved mortal, and did not in every instance require medical attendance, mostly yielding to regimen and simple domest-



tic remedies. The symptoms, which characterized this disease, were not much different from those that attend a heavy cold. The severest cases were generally ushered in with an ague chill, or sensation of cold, a hoarseness, soreness, and, as some expressed it, a rawness of the throat, lungs, and stomach, accompanied with an urgent cough, or hawking. Pains in the head, chest, back, or limbs, and frequently in all, with a lassitude, restlessness, and great prostration of strength, almost universally attended. The pains in the head were often severe, accompanied in a few instances with a vertigo, or slight delirium; in some cases it centered much in the frontal sinuses; in others, it affected the jaws, exciting great soreness in the parts, with tooth-ache; and in a few, it pervaded the ears, occasioning tinnitus aurium and deafness. The pain in the breast resembled that of pneumonia, particularly the peripneumonia notha, or intercostal rheumatism. Those of the back and limbs were often severe, and similar to the pains accompanying the accession of typhus and other fevers. The pulse were rarely full, or hard; the blood was not, except in some particular cases, much sily. The most robust patients very commonly swooned under the operation of venesection.

Dr. Ricketson, in the cure of this disease, recommends emetics, blisters, and particularly diaphoretics, such as rubbing the patient in warm vinegar, the general warm bath, or the semicupian blankets wrung out of warm vinegar as hot as could be borne, and applied to the patient, so as to produce a general but

moderate sweat, expectorants, and nauseating doses of emetics. A few instances, he observes, were said to put on a typhoid character, or to degenerate into a fever of that type, when they were to be treated accordingly. Dr. Ricketson observes, that in most of the communications received in answer to a circular letter, (the object of which was to obtain information respecting this disease) the symptoms of the disease were described as being more inflammatory, and denoting a greater phlogistic diathesis in the system, than was observed in the city of New-York.—This may account for the more liberal use of the lancet, which appears to have been used in many places as a general remedy.

*Extract from a description of the Influenza, as it prevailed in Clinton county, State of New-York, in 1807—By Dr. Horatio Powell, of Chazy.*

[See New-York Med. Repos. Vol. VI. Hex. 2. p. 347.]

DURING the months of April, May, and June, and the beginning of July, the weather was unusually cool; in the two former months, much rain fell. In April, many in this vicinity were affected with acute rheumatism, coughs, and other inflammatory disorders. These patients, I observed, were principally among that class of people who, from their occupation, were much exposed, being immersed for several hours in the day in the cold water of the lake, up to their knees, or waist, for the purpose of making rafts of boards, &c. Blood-letting, cooling

cathartics, antimonials, and sudorifics, were for the most part sufficient to work a cure. In May and June, the bilious remitting and intermitting fever prevailed very considerably. July was healthy. The influenza made its appearance in this vicinity about the 10th of August; from whence this wide spreading ailment originated, or by what laws of nature or of the animal economy it traversed, with such uninterrupted regularity, this and the neighboring States, uniformly from south to north, I am unable to determine. From its extensive prevalence, it did not appear to be merely endemical, neither was it contagious, but doubtless was owing to a peculiar state of the atmosphere, which peculiar state is best known by referring to meteorological tables kept during the continuance of this memorable epidemic.

Patients, for the most part, on the first attack of this disease, complained of being unusually chilly; all the symptoms of a common cold, or coryza, soon came on; their nostrils were completely stopped; they had an incessant tickling cough, and head-ache, and dull, and sometimes inflamed eyes. In some, the pulse were soft; in others, hard and frequent; they soon lost their strength: in general the appetite failed; some, however, continued to crave food as usual. Most commonly their bowels were in good order, urine high colored. Some sweated easily upon exertion; others had their skin obstinately dry.

September 11th, the influenza still raged. Many were at this time first seized with a pain in one or both ears; some with pain in one or more teeth,

especially if any were carious ; and some were first affected with a severe pain in the small of their back ; others in the back part of their head, complaining that the tendons of their neck were sore : all complained of a disagreeable bitter taste in their mouths, especially on first awaking in the morning.—Cold feet are not an unfrequent symptom, whilst the head, in some, at the same time, is extremely warm. Some patients are affected with severe chilliness, constantly for 24 hours previous to any preternatural heat or fever.

Our treatment has been to exhibit emetics, nauseating medicines, venesection when the pulse are hard, the feet to be kept warm, and the head cool.

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*Dr. David Arnell's account of the Influenza, in 1807, as it appeared in the county of Orange, State of New-York.*

DURING the course of the last spring, pleurifies, pneumonia, and inflammatory complaints, were very rife ; but they almost entirely disappeared by the middle of April. In the autumn, instead of the usual forms of fever which had prevailed, the influenza made its appearance. The first cases which I saw of it, were on the 5th day of August.\* Mr.

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\*It appears by Dr. Arnell's journal, that on the 30th day of July, at 6 o'clock, A. M. the thermometer was as low as 54° ; on the 31st, at 2 o'clock, P. M. it had risen as high as 82° ; making a variation of 28° in 32 hours : on the 1st day of August, at 6 o'clock, A. M. it had fallen as low as 53° ; making a variation of 29° in 16 hours ; and the variation probably had been still greater, as the sun, on the 1st day of August, at 6 o'clock, A. M. must have been one hour and a half high, during which time the thermometer will generally rise 6° or 7° after a very cool night.



James Clark and his family, consisting of five beside himself, were all attacked with it in the course of one night. They were taken with cold chills, hoarseness, pain in the head, breast, and side, which was soon succeeded by thirst, fever, dry tongue, coryza, and a defluxion from the nose; the pulse were full and hard. Treatment—Phlebotomy; cathartics, tepid, and mucilaginous drinks.

The subjoined meteorological table is taken from Dr. Arnell's diary of the weather and diseases which occurred during the time therein mentioned. The temperature of these months, as will appear by the table, is remarkably low for the latitude of the place; which I consider in part to be occasioned by the moisture of the place, caused by vast swamps, or drowned lands as they are called, creeks, and rivers, together with the abundance of rain that fell during the summer months; the evaporation from the surface must of course be great, and at the expense of the temperature of the air.

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Calculation, from May 15, to October 26, 1807, made  
in the County of Orange, State of New-York.

May	1070	853	66	58	13	59	78	40	30	7	10	4	6	1	2	0	4	1	0	5	4	pleurisy, cephalæa, odontal.
June	1957	1682	65	56	9	60	79	48	19	13	17	10	7	2	5	2	7	1	2	4	7	pneumonia, phrenitis
July	2215	1869	71	60	11	65	82	54	26	13	18	11	7	4	1	3	3	1	2	6	11	pleurisy, dysentery, ophthalm.
August	2213	1730	71	66	15	63	77	48	29	13	18	11	7	4	3	2	11	1	1	2	7	influenza, pleurisy, rheumat.
Septem.	1925	1598	64	53	11	58	71	48	21	20	10	6	4	8	1	0	5	2	1	4	9	influenza, diaphragmitis
Octob.	1489	1126	57	43	14	50	67	33	28	17	9	6	3	7	0	0	4	3	1	5	6	influenza, pleurisy
Total heat of the days.																						
Total heat of the nights.																						
Mean temperature of the days.																						
Mean temperature of the nights.																						
Difference of tem. betw d. & n.																						
Mean temp. of days and nights.																						
Greatest degree of heat.																						
Lowest degree of heat.																						
Greatest variation in 24 hours																						
Number of fair days.																						
Number of foul days.																						
Number of rainy days.																						
Number of cloudy days.																						
North-west.																						
North-east.																						
South-east.																						
South-west.																						
North.																						
East.																						
South.																						
West.																						
Direction of the wind.																						
Diseases which prevailed.																						

The above table is taken from Dr. Arnell's diary, made at the village of Scotchton, County of Orange, State of New York, in 1807, in latitude N. 41° 42'. longitude W. 75. The thermometer was placed in the open air on the north side of the house. The observations were made at 6 o'clock in the morning and at 2 o'clock in the afternoon.

The above table is taken from Dr. Arnell's diary, made at the village of Scotchtown, County of Orange, State of New York, in 1807, in latitude N. 41° 42'. longitude W. 75. The thermometer was placed in the open air on the north side of the house. The observations were made at 6 o'clock in the morning and at 2 o'clock in the afternoon.

*Account of the Influenza, as it appeared on Block Island, in 1807. By Dr. Aaron C. Willey.*

[New-York Med. Repos. Vol. V. Hex. 2. page 271.]

DR. Willey states, that the influenza made its appearance on Block Island early in February 1807, but in so mild a form that it was nothing thought of. In March, three cases only occurred that required assistance ; but in April, it became more violent, and sometimes assumed an alarming aspect. The milder forms put on the appearance of common colds, such as hoarseness, sneezing, cough, soreness and stinging of the throat, and discharge of mucus from the nose. But the more violent generally commenced with chills, alternating with flushes of heat, and great pain in various parts of the system, as the head, side, breast, bowels, &c. Some patients were costive, others loose. Some were affected with puking. One case resembled a phrenitis ; some resembled pneumonia, and others rheumatism. Many were affected with vitiated taste. The disorder was most severe with children. In them was generally great oppression, and rattling in the lungs, the tongue moist and frequently covered with a white fur, the pulse various. In one instance it proved fatal : this case was attended with costiveness, subsultus tendinum, a weak fluttering pulse, and hurried respiration.

As warm weather advanced, the disease in some measure disappeared ; but during the last days of August it returned, and became as prevalent as ever. It now for the most part began with pain in the eyes, head, posterior part of the neck, back, and

bowels, with lassitude, and soreness of the flesh, soreness of the throat and chest, cough, and expectoration, increased secretion of nasal mucus, and many times febrile symptoms. In some cases I found a preternatural slowness of the pulse. Some cases were obstinate and serious, but in general they readily yielded to medicine. Relapses were frequent.

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*Extracts from Observations on the Influenza, in 1807, as it appeared in Maryland. By Dr. G. Williamson, of Baltimore. In a Memoir, read before the Medical Lyceum of the City.*

[See *Medical Repository*, Vol. I. Hex. 3, page 145.]

THE last two years have been pregnant with epidemics, and have consequently been exceedingly interesting to the medical philosopher. Amongst the number who have written on the influenza which prevailed the last year, but few if any have accounted for, or even attempted to account for its origin. Is it one of those subjects which must forever remain a mystery? or is it only to be accounted for in that vague manner which appears to be the fashion of the day? or is it to be attributed to some unknown cause floating in the circumambient atmosphere?—Reasoning from philosophical principles, it appears rational to suppose that the origin of epidemics ought to be accounted for, and that in a satisfactory manner. But the language of experience to the medical inquirer seems to have been, “thus far shalt thou go, and no farther.”

Owing to the multiplicity of business, which I was engaged in the last year from my private practice, with that of the dispensary, I was prevented from keeping a diary of the weather ; nor was I able to be as particular with my observations and history of the disease, as desirable. These reasons are sufficient to deter me from attempting what I am so solicitous to see accomplished. I am however induced to believe, that the sudden transitions of the weather had a very material effect, as respects this disease. Last year the spring was remarkable for being cool ; as late as May there was frost ; it was

“ Winter ling’ring in the lap of May ;”

and although there were some hot days in June, yet there was much cool weather even after this. Never did I experience such sudden, frequent, and great changes in the weather, as during the spring and summer of 1807. After the summer commenced, days as cold almost as winter occurred, as though they had been transposed from January to June. One day the thermometer would be from 80° to 90°, and the next not above 70°. This was so much the case, that it was almost impossible to dress to suit the climate. One day a summer dress would be scarcely cool enough, and the next a winter one not too warm. These transitions were remarkable throughout the season ; but not so remarkable in July and August as in the preceding months ; and soon after the influenza made its appearance, there were several weeks of very warm weather.



I must undoubtedly consider the influenza as a species of catarrh; many of the cases that came under my care differed but little, if any, from the ordinary catarrhs to which we are annually subject. That a sudden transition of the weather is an active cause in producing this disease, is a truth so universally known, that to give a single case to prove it, would be imposing upon you. It commenced about the 12th of August. From the 20th of August to the 10th of September it was prevalent. From this period it gradually declined. Although this disease appears to have visited all America, yet it progressed with tardy steps in some directions.

It commenced frequently with sneezing; sometimes a cough, and at other times a pain in the head, breast, or some other part of the system, preceded the attack; and at other times, the eyes were first affected. Some were attacked suddenly; others were predisposed to the disease several days previous to a formal attack. When lassitude, accompanied with a soreness of the muscles and a depression of the spirits, took place, the disease might be expected; and if, in addition to these symptoms, there was a heaviness about the eyes, with a sense of intumescency in the palpebræ, coryza, and occasional sneezing, the person was almost as sure of having the disease as if he were then laboring under it.

In the treatment of this disease, after a few of the first cases, which were more of an inflammatory nature, in which the lancet was used, Dr. Williamson observes, those who were now attacked with



the influenza, complained of great general prostration of strength; and as there was evidently less inflammatory action than at first, I began to mistrust the propriety of the general use of the lancet; and from a few more trials was induced to discontinue it, except in those cases where there were more than ordinary symptoms of pneumonia, and the pulse indicative of considerable inflammatory action.

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*Extracts from an Oration, delivered before the Medical Society of South-Carolina. By Joseph Johnson, M. D. President of the Medical Society of South-Carolina.*

THE present year (1807) set in with the most uniform cold weather that has been known since the commencement of our Journal in the year 1793. Occasional showers alone prevented the occurrence of ice on every night in January, except the last. The thermometer, though not so low at any time as in February, stood at a much lower average, having until the last day of the month ranged at  $33^{\circ}$ , and including the heat of the last day, averaged at  $36^{\circ}$ . On the 18th there was a fall of snow. The winds prevailed twenty-two days from the northern, and nine from the eastern points of compass. Throughout the continent, the severity of the cold was in proportion. In Boston the thermometer fell to 0, and in Portsmouth to  $8^{\circ}$  below 0. The changes in February and March were very great and sudden; on the 6th the thermometer fell  $32^{\circ}$  in 17 hours, and had probably been lower. On the 10th it had increased  $27^{\circ}$  in 31 hours; and many

other changes of 15 to 24 degrees were observed in short periods during these months. Snow fell two hours and an half, on the 3d of February; and on the 13th there was smart thunder. The thermometer fluctuated from 24 to 69 degrees. Seven inches and three tenths of rain fell in this month, and six inches and six and a half tenths in March. The country was overflowed, and the roads for a time were impassible to carriages. The spring was unusually cold and backward; as late as the 3d of May there was frost.

The spring having been so backward, the accession of summer was rapid in proportion; and the 11th of June was one of the hottest days to which our climate is subject; the thermometer standing at  $92^{\circ}$  in a very cool situation, and at  $94^{\circ}$  generally throughout the city. The average heat of July was  $86^{\circ}$ , a range considerably higher than had been observed since 1796, and somewhat exceeding the great heat of that year. From the 26th of July to the 18th of August, there had been but one shower, the heat being steady and considerable; the endemial causes commenced about the latter date, and was aggravated by the extremely hot weather from the 1st to the 5th of September, when the thermometer at noon, in the coldest situation, varied from  $90$  to  $92^{\circ}\frac{1}{2}$ .

Influenza is noticed as occurring in March and April, although not sanctioned by our Journals. My opinion was then supported by the concurrence of several eminent physicians, and has since been confirmed by a correspondence of symptoms with that which prevailed in the fall. On the first of its appearance

in the latter period, the symptoms were so mild that few required the attendance of a physician. This lulled many into a fatal security; and when about half the inhabitants had been attacked by it, a cold change took place in the weather, during which many relapsed, and several lost their lives. So general was the prevalence of this disease about the middle of October, that many families had from fifteen to twenty sick at a time.

Dr. Johnson mentions, that on the 20th of October there was frost within two miles of the city; that for more than three months the weather had been extremely dry; that relapses were very frequent, and in all such cases the symptoms were greatly aggravated, and frequently accompanied by violent determinations to the pleura, and mediastinum; that the number of deaths in Charleston by the influenza, in the month of September, was 114; that bleeding and other evacuants, with emollient drinks, were the only remedies necessary at first; but frequent blisters were afterwards requisite; that the influenza was still more fatal in the interior and northern parts of the State; and that in these parts bleeding was said to have been injurious.

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*Description of the Influenza, as it appeared in Nashville, West-Tennessee, in 1807; in a letter to Dr. Mitchell, from Dr. Thomas G. Watkins; published in the New-York Medical Repository, Vol. 6. Hex. 2.*

NASHVILLE is situated about the 36th degree of north latitude. A long, dry, and sultry course of



weather preceded the appearance of the influenza. Grass and corn blades were suddenly parched up early in August, and continued so through autumn, and a great many constant springs were dried up entirely, or sunk from their usual level, so as to fail. This state of things continued until a short time before the 1st of November. About the 1st or 2d day of this month, the sudden arrival of the influenza ushered in, by cold north-easterly winds and rain. It seemed to fall upon all at once. Its progress seemed to be from east to west. It travelled in this direction with great celerity. Fewer negroes were laid up with it than whites, under equal circumstances; but more negroes died of it than whites.

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*Account of the Influenza, as it appeared in Wheeling, State of Ohio, in the year 1807. By Dr. Gideon C. Forsyth.*

[See N. Y. Med. Repos. Vol. VI. Hex. 2. p. 350.]

THERE is perhaps no river in the United States so subject to sudden falling and rising of its waters as the Ohio, and the rivers which run into it. Sometimes it can be forded with ease; and again it will admit of large vessels to pass it with safety. I have observed, that its sudden rise is generally attended with affections of the lungs. In my note book for May 20th, 1807, I find the following remark: "for several weeks past, the influenza has prevailed in this and the adjacent counties; supposed to be caused by the sudden melting of the

snow on the mountains, which produced a very great rise of the waters in the Ohio ; the air very damp, and cold wind north and north-west. Its symptoms were cold shiverings, pain in the head, generally across the eyes, full pulse, sore throat, an ichorous discharge from the nose and eyes, cough, and pain in the limbs. The influenza appeared general in this country twice in 1807, viz. May and October."

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ACCOUNT OF THE SPOTTED FEVER,  
in the year 1807, in the town of Winchester, Connecticut.

[See N. Y. Med. Repos. Vol. XIII. p. 44.]

" THIS disease appeared in the town of Winchester, in Litchfield county, in April 1807, when the frost was dissolving, and the ground breaking up ; and was noticed to make the attack, most frequently, in rainy weather. Young people under the age of puberty were most liable to it ; and among adults, females were more liable than males. No age or sex, however, were free from the attacks. It assumed, in different subjects, all grades of disease, from a mild fever to a perfect plague. The symptoms were various, according to its inveteracy. Its attacks were with lassitude, chills, great prostration of strength, eyes red and watery, pupils dilated in some cases, in others small like dying persons after delirium, with exquisite pain in the head, great anxiety at stomach, with tossing of the body : nausea, and often troublesome vomiting, a pain and lameness in some of the limbs, often ushered in the



disorder. There was a soreness of the flesh, and generally spots on the skin, the size of half a common turkey shot, scattered over the body, resembling blood blisters: likewise efflorescences of various sizes and shapes, in different parts, which were dark or florid; and a dark or light color of these spots and efflorescences gave a clue to a favorable or unfavorable prognostic: the darker, the more dangerous. In some, after the chills, there was great heat; which was of the thrilling, stinging kind. The pulse, like other symptoms, were various; sometimes considerably full, but generally very weak, quick, and irregular.

The disease, sometimes in this season, assumed the inflammatory type; sometimes the synochus; but generally the typhus. The violent symptoms were great lassitude, with universal pains in the muscles; chills, heats, if any, were of short duration; unusual prostration of strength; delirium, with severe pain in the head; vomiting, with indescribable anxiety at the stomach; eyes red and watery, and rolled up; the head drawn back with spasms; pulse quick, weak, and irregular; petechiæ and vibices all over the body; a cadaverous countenance; and finally death often closed the scene in ten or fifteen hours after the first attack. Some however survived all these symptoms. Those who died, generally appeared to sink away under the load of the disease; became cold, and low, and died comatose, with all the marks of general mortification: others went off suddenly, apparently apoplectic.—The body, near the fatal period, and soon

after, became as spotted as an adder, and demonstrated a general dissolution of the fluids. Those who survived these symptoms, appeared to owe their life to a very liberal use of strong stimulants, and tonics; and when the vital flame began to be rekindled in the system, some grievous external affection most certainly appeared; such as inflammation of the joints like the acute rheumatism, or an erysipelatous affection of the skin, or racking pains without any morbid external appearance, convulsions, spasms, &c. These external affections often proved very lingering and tedious; and, in some instances, quite exhausted the patient. This, however, proved a manageable state of the disease, and rather to be desired than feared.

Those who died, chiefly went off with lowness, which took place early in the disease; some in five or six hours; but, they generally died between twenty-four and forty-eight hours after the attack. If they survived forty-eight hours, the disease assumed the type of fever, and became manageable, like other febrile diseases. Some died at a later period, but no more than are commonly carried off by other bad conditioned fevers.

In September following, the disease made its appearance in the village of Wenstead, attended with less inflammatory symptoms. The eruption on the skin was not so general, nor the inflammation of the joints so severe, as in Winchester the preceding spring. The disease, in this season, frequently succeeded the influenza; and more generally assumed the typhus form. Bleeding was tried, but

I believe always did harm. Sweating, produced by external heat, and internal stimulants, proved most successful.

In December following, the disease appeared in the town of Goshen. In the spring following, and fore part of summer, the disease appeared in various towns adjoining; the first mentioned, with symptoms considerably different. An eruption on the skin so seldom appeared, that it could no longer be considered a characteristic symptom of the disease. Those spots, the size of half a shot, resembling blood-blisters, have not appeared in those cases which I have seen; and inflammation of the joints, above-mentioned, are now seldom noticed. All the attacks for the year past, which I have seen, are of the low typhus kind. Generally the disease, the year past, has been much milder than before."

[*See New-York Med. Repos. Vol. XIII. p. 42.*]

*A Synoptical View of the Weather and Diseases, from  
February 1, 1809, to February 1, 1810.*

TABLE 5.

TABLE 5.													Direction of the wind.	
Febr.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Result		Total heat of the days.
609	1121	1528	1839	2179	2261	2299	2027	1971	1025	999	620	18478		12983
285	560	1076	1432	1819	1896	1874	1494	1538	626	771	412	50		631
24	36	50	59	72	73	74	67	63	34	32	20	631		419
10	18	35	46	60	61	60	49	49	21	25	13	419		143
14	18	15	13	12	12	14	18	14	13	7	7	143		0
17	27	42	52	66	67	67	58	56	27	28	16	0		87
44	51	68	80	87	84	85	80	82	56	55	54	87		23
8*	1*	32	35	43	50	48	31	29	11	6*	21	23*		53
36	30	28	31	24	26	37	36	31	28	21	53	53		216
18	20	21	16	14	17	17	25	21	15	18	14	149		22
10	11	9	15	16	14	14	5	10	15	15	17	149		22
4	3	3	2	4	4	4	0	0	3	5	5	77		47
1	5	4	4	12	11	13	3	5	5	5	9	0		8
4	3	2	2	4	3	1	2	5	7	5	9	0		172
1	0	1	1	0	0	0	0	0	0	0	0	172		25
16	18	14	12	13	18	14	18	9	13	16	11	28	57	
2	2	5	5	1	3	0	0	1	2	2	2	28	57	
1	7	1	3	1	0	5	1	1	2	2	7	28	57	
2	3	5	4	14	5	5	5	9	2	3	4	28	57	
3	1	2	2	0	2	0	2	2	9	2	3	28	57	
3	0	1	3	1	0	0	4	7	3	4	4	32	22	
1	0	2	0	0	5	0	0	2	0	1	0	22	22	
0	0	0	0	0	0	0	0	0	0	0	0	1	1	
													Diseases which prevailed.	
													Synocha	
													Rheumatism	
													Odontalgia	
													Cephalac	
													Cephalac	
													Diarrhea	
													Synochus	
													Synocha	
													Ciagria	
													Synocha	

\* Below 0.

Direction of the wind.



*A Succinct Account of the Weather and Diseases in the  
years 1809 and 1810.*

THERE were no remarkable circumstances which occurred in the first eleven months in this table, except the uncommon low temperature, and extreme wet weather. The changes of temperature and diseases, which happened in these months, are not unusual, except in a few instances, which I noticed ; when the pulse were low and soft ; the extremities colder than natural, purplish, and moderately swollen. It will appear by the table, that all the months (in this calculation) are several degrees below their mean temperature, except October and December. The mean temperature of these months is  $48^{\circ}$  and  $24^{\circ}5$  ; but in the table, their temperature is marked  $56^{\circ}$  and  $28^{\circ}5$ , which makes the former 8 degrees warmer than common, and the latter 4. The number of fair days is 216; and foul, or rainy, snowy, cloudy, squally, &c. 149, making 14,5 of foul weather more than usual. There are likewise 4 days excess of north wind, and a diminution of 5 days south wind, which make in the whole 23,5 days, which were unfavorable to the increase of temperature. The mean temperature of the present year is but  $43^{\circ},0$  ; and the mean annual temperature of these very cold seasons is  $46^{\circ},1$ .\* From which statement we per-

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\* President Fitch makes the mean temperature of the five summers immediately succeeding the summers in 1804 and 1805, one and three-fourths of a degree lower than the mean temperature of the summers in 1804 and 1805. If we add this difference of temperature to the mean annual temperature of late years, it will stand thus,  $46,11 + 1,75 = 47,86$  ; which is probably sufficiently low for our real mean annual temperature ; and if our mean annual temperature



ceive, that the diminution in the mean annual heat is  $3^{\circ},1$ , which is equal to the heat produced by the sun in our climate for 23 days and 80 parts of a day. Notwithstanding this great diminution of heat this year, yet most of our fruits ripened, peaches excepted. The crops of grain and grass were very good; and even Indian corn, except on wet or frosty ground, came to maturity; but the crop was very small in this State; and in the State of Vermont and the Province of Canada it almost entirely failed.—The weather, as appears by the table, was steady, but uncommonly cool and wet.

There is no month until January, in which any great or sudden vibration of temperature happened, and the season was of course healthy. A few cases of typhus mitior occurred, but they were uniformly mild. The temperature, though it was very low, yet the heat was distributed in a very favorable manner. The warm season continued until the 25th of October, when we had the first killing frost. The month of October, and first part of the winter, was as remarkable for being mild, as the spring and summer were cool.

From the 1st to the 19th of January, 1810, the weather was milder than common. The mercury frequently rose as high as  $38$  and  $40^{\circ}$ , and never fell below  $5^{\circ}$ . On the 16th, 17th, and 18th, the temperature of the nights was from  $29$  to  $31^{\circ}$ , and the days from  $37$  to  $41^{\circ}$ . During these moderate days, may be considered to be  $47^{\circ},86$ , the difference will be  $4^{\circ},768$  (as  $47^{\circ},86 - 43^{\circ},092 = 4^{\circ},768$ ) which is a diminution in the mean heat of our climate of  $4^{\circ},768$ ; and is equal to the whole heat produced by the sun that year in our climate, for 40 days and 386 parts of a day.

the top of the ground had thawed, and the sap of trees was said to have circulated freely, and the ground was mostly bare. On the evening of the 18th there fell a small quantity of snow, perhaps half an inch, from the south-west. The evening was remarkably calm and still until ten o'clock, at which time a very great and sudden change took place; the first appearance of which was, very dark, dense, and heavy clouds, settled or rather rolled from the mountains in the west, attended with a singular undulating roar: the wind varying from south-west to north-west, and thence north, and from north back to north-west; the sky was covered with a thick haze; the cold was dreadful, and the wind stronger than perhaps was ever before known. The thermometer, at sunrise on the 19th, was considered to have stood at  $19^{\circ}$  below 0; and at 10 o'clock in the morning at  $23^{\circ}$  below 0: after 10, the wind veered into the north-west, the haze disappeared, and the weather moderated. On the morning of the 20th, the thermometer stood at  $15^{\circ}$  below 0, and at 5 o'clock, P. M. at  $12^{\circ}$  below 0. On the 21st in the morning, at sunrise, at  $16^{\circ}$  below 0; at 5 o'clock, P. M.  $10^{\circ}$  below 0. On the 22d, at sunrise,  $11^{\circ}$  below 0; at 5, P. M.  $10^{\circ}$  above 0; and on the 23d, at sunrise,  $5^{\circ}$  above 0; at 5 o'clock, P. M.  $21^{\circ}$  above 0.

During this severe frost, several lives were lost by the extreme cold. The hoofs and horns of cattle were likewise frozen. Trees, particularly the exotics, as apple trees, peach trees, quince trees, and Lombardy poplars, &c. suffered much. Many died

this year ; though most of them leaved out in the spring, but soon after died. Others died but in part. Even the sturdy oak and the elm were not found hardy enough to endure the violence of this frost. Several persons, as was before observed, lost their lives by its immediate operation. Others, some of whom I visited during this period, were affected with a severe chill, from which they gradually recovered.



*A Synoptical View of the Weather and Diseases, from  
Feb. 1, 1810, to Feb. 1, 1811.*

### TABLE 6.

TABLE 6.													
Result	19136	15061	52, 3	41, 3	11, 6	46, 8	88 10*	33	233	132	23	79	21
Jan.	790	562	25	18	7	21	50	11*	30	12	6	3	3
Dec.	860	640	29	21	8	25	51	5	13	8	6	2	0
Nov.	1134	946	37	31	6	34	57	17	17	12	1	9	2
Octo.	1668	1383	54	44	10	49	76	22	33	8	0	4	4
Sept.	2048	1685	68	56	12	62	80	45	26	0	6	2	0
Aug.	2403	1940	77	62	15	69, 5	86	50	26	16	0	16	0
July	2351	1904	75	61	14	68	86	47	28	10	0	9	1
June	2386	1875	79	62	17	70, 5	88	43	25	17	0	17	0
May	1998	1582	64	51	13	56, 5	88	30	24	10	0	4	3
April	1669	1174	55	39	16	47	79	20	32	8	2	5	1
Mar.	1080	828	35	26	9	30, 5	51	12*	25	16	6	1	4
Febr.	754	542	26	19	7	22, 5	45	7	27	7	2	3	1
Total heat of the days													
Of the nights													
Mean temperature of the days													
Of the nights													
Difference of temperature betw. days & nts													
Mean temperature of the days and nights													
Greatest deg. of heat													
Lowest deg. of heat													
Greatest vari. in 24 h.													
Number of fair days													
Number of foul days													
Number of snowy days													
Number of rainy days													
Number of cloudy days													
Number of squally d.													
Direction of the winds													
North-west													
North-east													
South-east													
South-west													
North													
East													
South													
West													
Diseases which prevailed.													
Sphacelus													
Spot. Fever													
Ditto													
Cephalau													
Diarrhoea													
Bil. Synocha													
Ditto													
Ditto													
Synocha													
Ditto													

\* Belazu O.



*A Succinct Account of the Climate and Diseases in the years 1810 and 1811.*

SINCE the great changes which happened in January, 1810, as will appear by the table, no remarkable change has taken place. The seasons have been comparatively mild and temperate, except the month of October, which has suffered rather greater changes than are usual, even in these intemperate seasons. The mean greatest variation in 24 hours for October, is  $30^{\circ},75$ ; but in this table the greatest variation in 24 hours is  $33^{\circ}$ , making an excess of  $2^{\circ},25$ .

In the month of March, one suspicious case of fever occurred. The person, who was the subject of it, was accustomed to sit in a warm room in the day, and was exposed to the chills of an evening air. The constitutions of many people appeared to have suffered a change. Cold and purplish hands, rather swollen, were common. Ulcers similar to those which formerly healed readily, now healed with difficulty; and were occasionally affected with mortification, and consequent sloughing away of the soft parts; and a repetition of mortification, which, eventually in some instances, from a very small and apparently trifling sore, produced extensive ulcers, sometimes proved fatal to the patient. The mortifications, which happened at this time, were of a peculiar nature. The mortified parts retained nearly their natural color, until they sloughed away.

On the 30th of April, an unequivocal case of spotted fever occurred; but the patient had been



very much exposed. Her feet, to the ankles, were said to have been immersed for a considerable time in cold water the day before she was taken ill.—May 4th, another case occurred, which appeared at first very dangerous. This person likewise had been very much exposed. She was out, for some time, in a shower of sleet, which fell this day, and immediately after was attacked with violent shivering fits.—In September and October, a bilious fever was frequent; and though it differed considerably from the fever which had formerly prevailed at this season, it admitted of bleeding.—December 1810, and January 1811, were mild for the season; and, compared with those months in preceding years, were not remarkable for any sudden change. The only circumstance unfavorable to the temperature of those months, was an excess of wind from the north and east, in January. There occurred five days north wind, and seven east, which is an excess of  $2\frac{1}{2}$  north, and  $4\frac{1}{2}$  east. Five rainy days likewise occurred in these months.

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*Account of the Spotted Fever, in 1810, as it appeared in the town of Petersham, Massachusetts; in a letter from the Rev. Festus Foster, to the Editor of the Worcester Spy, dated March 6th, 1810.*

[See N. Y. Med. Repos. Vol. I. Hex. 3. p. 392.]

“SIR—I hasten to give you a sketch of the spotted fever in this place. It made its first appearance about the beginning of January last; but the in-

stances were few and distant from each other, until last week. Although it had proved fatal in most instances, seven only had died, belonging to this town, previous to the 25th of February. Since that time, the disorder has come upon us like a flood of mighty waters. We have buried eight persons within the last eight days. About twelve or fifteen new cases appeared on Thursday last; many of them very sudden and violent. This was the most melancholy and alarming day ever witnessed in this place. Seven or eight physicians were continually engaged in the neighborhood north of the meeting house; and I believe not half an hour passed in the forenoon without presenting new cases. Pale fear and extreme anxiety were visible in every countenance."

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*Account of the Spotted Fever in 1810.*

THE year 1810 was very remarkable on account of the general prevalence of the spotted fever to the south-west and north-west of this State, particularly in the States of Massachusetts, Connecticut, and Vermont, and in the Province of Canada. In this and the neighboring towns, a strong predisposition was very evident in many of the inhabitants; but, as will appear by the table, the season, after the great changes which happened in January 1810, was in this place comparatively favorable. The number of cases occurring were few, and had the appearance, as far as I have knowledge, of being produced by accidental exposure to cold.

*A Synoptical View of the Weather and Diseases, from  
Feb. 1, 1811, to Feb. 1, 1812.*

TABLE 7.

	Febr.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Result.	
Total heat of the days.	793	1399	1698	2015	2337	2422	2362	2038	1649	1173	867	655	20147	
Total heat of the nights	569	939	1163	1316	1855	2049	1966	1735	1363	1023	620	441	15233	
Mean temperature of the days.	20	30	38	48	61	66	63	57	44	34	20	14	141	
Of the nights.	8	15	18	17	16	12	13	10	9	5	8	7	713	
Difference of temperature betw. da's & nts	24	37	47	56	69	72	69	52	48	36	24	17	448	
Mean temperature of the days and nights.	44	62	76	76	92	94	93	88	76	55	50	45	94	
Greatest a.g. of heat.	2*	10	20	36	45	54	52	40	20	16	10*	15*	34	
Lowest a.g. of heat.	20	35	30	32	33	32	24	21	26	18	23	32	235	
Greatest vari. in 24h.	14	26	25	20	18	16	20	24	18	19	18	17	130	
Number of fair days.	14	14	7	3	2	1	1	0	0	0	0	1	172	
Number of foul days.	14	5	5	5	12	15	11	6	13	11	13	14	130	
Number of snowy days	7	3	2	1	0	0	0	0	2	1	6	4	32	
Number of rainy days	1	1	1	1	8	4	4	2	6	5	4	3	62	
Number of cloudy days	5	1	2	2	2	2	1	0	0	0	3	3	34	
No. of squally days.	1	0	0	0	0	0	0	0	0	0	0	1	21	
North-west.	12	14	8	12	8	16	11	15	19	20	19	18	172	
North-east.	9	3	5	5	4	2	0	1	0	1	5	7	42	
South-east	1	2	2	1	4	1	3	2	2	2	0	2	22	
South-west.	0	0	3	3	6	5	1	2	0	1	1	0	22	
North.	2	2	4	3	3	0	4	1	0	0	3	4	23	
East.	3	3	1	0	4	2	2	0	6	5	0	0	26	
South.	1	7	6	7	0	5	10	1	4	1	2	0	48	
West.	0	0	1	0	0	0	0	8	0	0	1	0	10	
Diseases which prevailed.	Hydortha.	Ophthalmia.	Erysipelas.	Catarrh.	Cephalagia.	Ditto.	Diarrhoea.	Dysentery.	Bil. Fever.	Synochus.	Typhus.	Synochus.		

\* Below 0.

*A Succinct Account of the Climate and Diseases in  
1811 and 1812.*

FEBRUARY, as will appear by the table, was more mild than usual. March, notwithstanding its greatest vibration, is marked one degree below the medium for this month, occurring in these intemperate years. Yet, it will appear by the journal, that great variations of temperature were frequent in this month. There were six great variations, which stand thus, 29—30—32—35—32 and 35. These variations were likewise aggravated by north-west and north winds succeeding a moist and damp south wind; yet March, and the other spring months, were comparatively warm, and the variations of temperature were not so great as have happened in the same months for several preceding years. A singular eruption occurred this season, which I then called erysipelas; but have since considered it to be a grade of spotted fever. The patient appeared rather more dull and drowsy than usual. An eruption, or rather dispersed blisters, made their appearance on the face; but this was not invariably the case. They sometimes appeared on the arms, neck, &c. These blisters, in some patients, spread and occupied the whole face, which soon became very much bloated. They appeared to consist of an effusion of coagulated lymph, immediately under the cuticula. In a short time the thinner parts were absorbed by the capillary vessels, and evaporated by the atmosphere; so that the remaining more gross and adhesive parts of this effusion were dried into a crust of a hard and com-



paët appearance, resembling plates of horn, which gave the patient a very singular appearance. These crusts gradually separated and peeled off, leaving the skin beneath sound. In others, these blisters did not occupy the whole face, but appeared in irregular blotches, with jagged margins. I saw no case of this kind which appeared dangerous. Others affected had small milliary eruptions, which appeared in irregular clusters like ring-worms.

The year 1811 was warmer than any other year that has occurred since 1806. The mean temperature is marked in the table  $48^{\circ},454$ . From March to the end of the year it was as healthy as common, and no particular disease appeared worthy of remark.

January, 1812.—Though nothing very remarkable appears in the table respecting this month, yet, by examining the Journal, it will be seen that in it the coldest seven days occurred which have been known since we have had any correct account of the temperature of this country. On the 16th, in the morning at sunrise, the mercury stood  $4^{\circ}$  below 0; and at one, P. M. it stood  $5^{\circ}$  above 0: the 17th, at sunrise,  $6^{\circ}$  below 0; and in the afternoon,  $8^{\circ}$  above 0: the 18th, at sunrise,  $8^{\circ}$  below 0; P. M.  $4^{\circ}$  below 0: the 19th, at sunrise,  $15^{\circ}$  below 0; P. M.  $1^{\circ}$  below 0: the 20th, at sunrise,  $1^{\circ}$  below 0; P. M.  $4^{\circ}$  below 0: the 21st, A. M.  $1^{\circ}$  below 0; P. M.  $3^{\circ}$  below 0: and on the 22d, A. M.  $14^{\circ}$  below 0; P. M.  $2^{\circ}$  below 0. The direction of the wind was two days north, four days north-east, and one day north-west. Once, for a short time, it veered into the south-east, then north, and north-east,



south, east, north-west, and finally north-east. On the 20th, some snow fell, which ended in a rain, or rather in frozen mist. During this month, there were 17 fair days, 10 snowy days, 3 cloudy days, and 1 squally. The wind was north-west 18 days, north-east 7 days, south-east 2 days, and north 4 days. The range of the thermometer was 60°. The mean temperature of the month was 17°,5. The whole number of days, on which the wind blew from the north, or had a northerly bearing, were 29. During the greater part of which time, it blew an extreme cold and heavy gale. Perhaps the oldest man living never before experienced so severe and long continued frost. The leaves of the pine, hemlock, fir, and other evergreens, were killed by this cold northerly blast, much more than I ever before recollect to have seen them, and especially in bleak and exposed situations.



*A Synoptical View of the Weather and Diseases, from  
February 1812, to January 1813.*

TABLE 8.  
Leap year.

	Febr.	Mar.	April	May	June	July	Aug.	Sept.	Octo.	Nov.	Dec.	Jan.	Result
Total heat of the days	828	1202	1572	1934	2360	2267	2369	1923	1489	1129	887	618	18578
Of the nights	469	628	1056	1333	1865	1843	1908	1466	1017	864	622	402	13473
Mean temperature of the days	28	39,3	52,4	62	78	73	76	64	48	38	28	20	50,7
Of the nights	16	20,0	21,2	19	16	16	15	16	16	9	8	13	13,9
Difference of temperature betw. days & nts	12	19,2	17,2	19	16	16	15	16	16	9	8	7	13,9
Mean temperature of the days and nights	22	29,8	43,8	52,5	70	70	68,5	56	40	33,5	24	16,5	43,7
Greatest aeg. of heat	45	73	70	89	90	93	93	79	76	55	50	38	93
Lowest deg. of heat	12*	1*	18	29	41	49	52	30	29	19	4*	16*	16*
Greatest vari. in 24 h.	45	46	35	35	26	28	37	27	25	32	30	45	46
Number of fair days	15	17	16	15	14	14	16	19	22	23	18	20	214
Number of foul days	14	14	14	16	16	16	15	11	9	7	13	11	152
Number of snowy days	9	3	2	3	0	0	0	0	0	3	8	5	33
Number of rainy days	1	2	2	6	11	12	11	6	5	3	1	2	62
Number of cloudy days	4	9	10	7	5	0	4	5	3	0	3	4	54
Number of squally d.	0	0	0	0	0	0	0	0	1	1	1	0	3
North west	10	16	13	18	15	14	6	14	13	13	15	9	166
North-east	6	4	0	9	4	2	7	0	2	1	6	4	44
South-east	0	2	0	0	5	5	2	0	0	0	1	4	21
South-west	5	6	8	1	2	1	7	7	2	1	1	2	41
North	9	2	0	2	0	2	4	1	5	1	2	3	31
East	0	0	2	0	2	0	0	4	0	2	5	0	15
South	1	1	3	1	2	2	5	3	9	0	4	7	42
West	0	0	2	0	0	0	1	1	0	0	0	0	6

Direction of the winds

Diseases which prevailed.

Pleurisy  
Pneumonia  
Spot. Fever  
Ditto  
Spot. Fever  
Effus. blood  
Abscesses  
Gyranalic  
Ditto  
Typhus  
Synochus.  
Ditto

\* Below 0.

*A Succinct Account of the Weather and Diseases which occurred in the years 1812 and 1813.*

FEBRUARY 1812, like January in the same year, was subject to very extraordinary variations, as will appear by examining the table. In its mean temperature, and in the difference of temperature between the days and nights in this month, there is nothing uncommon. The mean greatest variation, marked in the table for the month of February, is  $35^{\circ},5$ ; but we find this month to have suffered a variation in the present year of  $45^{\circ}$ . There are likewise 6 days of north-east wind, 9 north, 3 south-west, 1 south, which alternating with the northerly winds, made the changes more sensibly felt than they otherwise would have been. By examining the Journal we find, that seven extraordinary variations happened in this month. On the evening of the 5th, the mercury stood at  $40^{\circ}$ : the 6th in the morning it had fallen to  $5^{\circ}$  below 0; at three o'clock, P. M.  $2^{\circ}$  below 0: on the evening of the 7th, it had risen to  $34^{\circ}$ : on the evening of the 11th, it stood at  $28^{\circ}$ : in the morning of the 12th,  $5^{\circ}$  below 0: on the evening of the 15th, it had risen to  $43^{\circ}$ : on the morning of the 16th, it stood at  $10^{\circ}$ ; on the 16th, P. M. the mercury stood at  $38^{\circ}$ : the 20th, A. M. it had fallen to  $3^{\circ}$ : the 23d, P. M. it stood at  $36^{\circ}$ : the 24th, A. M. it had fallen to  $4^{\circ}$  below 0: the 26th, it stood at  $31^{\circ}$ : the 27th, it had fallen to  $12^{\circ}$  below 0. The variations will stand thus, 45, 36, 33, 33, 35, 40, 43: and the period of most of these great variations is from 12 to 18 hours only. On the 14th we had snow and rain; and, if I remember

light, fog. The range of the thermometer this month was  $57^{\circ}$ .

On the 16th of this month an obscure case of spotted fever occurred. I bled my patient, and I think to his disadvantage. He recovered, but it was with great difficulty, and very slowly. His case had very nigh proved fatal from an excessive discharge of mucus into the bronchial cells. *Symptoms*—The person being at work in the woods, about one fourth of a mile from his house, was suddenly attacked by a violent pain in the head, which soon removed to the right side of the thorax, and there became stationary. Such was the violence of the attack, that his strength failed, and he immediately fell to the ground; but recovering a little, he had so much strength and presence of mind as to clasp his horse's neck with his arm, and by this aid he staggered home. When I first saw him, his face and eyes were very much swollen, and of a faint purplish red; his pulse were full and soft; his breathing was very much oppressed, with a severe pain in the side.—Several other cases happened about this time.

March 1812, as appears by the table, was very remarkable; its mean temperature was more than one degree below its usual mean; but the difference of temperature between day and night was one degree above. The thermometer rose  $12^{\circ}$  higher, and fell  $4^{\circ}$  lower, making the range of the thermometer  $16^{\circ}$  greater than the mean range. The greatest variation in 24 hours is  $46^{\circ}$ ; which is  $9^{\circ},5$  more than the usual mean greatest variation.



There was likewise an excess of foul weather, and other unfavorable circumstances, as will appear by the table. On examining the journal, the changes are found as follow: On the 10th of March, the mercury stood at  $16^{\circ}$ , A. M.; and in the afternoon it rose to  $50^{\circ}$ : on the 11th, in the afternoon, it stood at  $62^{\circ}$ : on the 12th, in the morning, it had fallen as low as  $16^{\circ}$ : on the 23d, A. M. it stood at  $29^{\circ}$ ; P. M. it rose to  $59^{\circ}$ : the 24th, in the morning, it had fallen to  $21^{\circ}$ , and rose to  $51^{\circ}$  in the afternoon: the 25th, in the morning, it stood as low as  $26^{\circ}$ ; and rose to  $57^{\circ}$  in the afternoon; the 26th, in the morning, it had fallen to  $25^{\circ}$ ; in the afternoon it rose to  $60^{\circ}$ : the 27th, in the morning, it had fallen to  $37^{\circ}$ ; and rose in the afternoon to  $73^{\circ}$ : and on the 31st, in the morning, it stood at  $27^{\circ}$ ; in the afternoon it rose to  $58^{\circ}$ . It should be remarked, that the periods of these variations are but little more than 12 hours. The number of the degrees of variation are as follow:  $34,=46,=30,=38,=30,=31,=35,=36,=46,=31$ .

On the 12th and 13th, several fell sick. I visited a patient on the 14th; she had a severe pain in her side, and difficult respiration, &c. I had my doubts respecting the nature of her disease. Her pulse were full, strong, and I think rather soft. I bled her—gave a cathartic—and directed an epispastic to be applied to the pained side. She recovered: but, about five weeks after, being very much exposed, she took a violent cold, which reproduced the disease, and soon proved fatal.—On



the 15th, I visited a patient with symptoms similar to the above. He had been ill of the disease two or three days. At his particular request, I let blood; but had my doubts as to the propriety of the operation. His case terminated fatally, in about four days from the attack, in consequence of an effusion of lymph into the cells of the bronchia.—The three cases abovementioned appeared similar to a pleurisy; or at least so much so that I could discern at that time no important difference. The pulse, as near as I can recollect, were not so hard, but were as full and strong as we usually find them to be in a real pleurisy. The reasons of my doubts respecting the nature of the disease, were, the attack was more violent than in a real pleurisy; the head-ache was attended with a peculiar throbbing of the temporal arteries, and was more severe than usually happens, in the pleurisy; the countenance had more of a leaden cast; and the face had more of a bloated appearance: but these are circumstances that we are liable to overlook. The circumstances which caused me to hesitate as respected the propriety of blood-letting, were the extreme difficulty which attended the recovery of my first patient—the unusual progress of the disease, viz. the febrile paroxysms were irregular, and uncertain—the patient appeared not very sick at times, but was far from being well—was drowsy—his countenance had a singular aspect, and was very much sunk.

On the 15th of March, we had hail; the wind was south: the 16th, rain and south: wind the 17th, snow, the wind south-east and north-east.

During these three days, and two or three days after, the disease increased with great rapidity. It was now no longer disguised, but assumed its characteristic symptoms, viz. extreme cold shivering, acute pain in the side or head, but occasionally in the hands or feet. Sometimes it affected the bowels and back, in the form of colic or dysuria. In other cases, the most acute pain would be felt in the ear, the jaw, or even in a tooth. The breathing was in most cases difficult; attended with cough, and often with a bloody expectoration. Delirium was a frequent, but not an uniform symptom. Some were affected with an unmanageable furious delirium, similar to that which attends phrenitis. Others were affected with low muttering, and comatose delirium, attended with a disposition to sleep. Some few, as the disease declined, became insane; but the insanity was of short duration, and entirely left them on the recovery of their strength.—Difficulty in voiding the urine was almost a constant symptom: the hands and face were generally of a leaden colour, and moderately swollen: a very slow motion of the blood in the capillaries was very perceptible, by making a slight pressure on these parts with the point of the finger: effusions of blood or lymph in the rete mucosum and cellular membrane, as likewise effusions in the sockets of the eyes, (the eye-balls were occasionally suffused with blood) deep effusions in the extremities, lying in immediate contact with the periosteum, and occasionally occupying the whole limb, and extending from joint to joint; effusions of blood and lymph in the cavity of the thorax, in

the cells of the bronchia, and in the brain, &c. Blood was occasionally discharged with the urine, and in some cases from the bowels, resembling dysentery. Some one of the above named effusions happened in most cases. Raising blood from the lungs was frequent; in some instances it was discharged in considerable quantity; but more frequently it was expectorated with the mucus from the lungs, and was very trifling. A discharge of blood from the nose was frequent, and not an unfavorable symptom; also a milliary eruption, or an eruption of white pimples which had a spherical appearance, and stood out considerably prominent; from the sight, I at first supposed them to contain water, but on examining them I found they were very hard, and unyielding: likewise a rash, or an eruption similar to ring-worms, was very common, and attended the mildest form of this fever. The above disease continued to prevail with great violence and mortality until about the 10th of May; at which time it abated in its violence, and frequency; though occasional cases happened, some of which proved fatal, until the middle of July; after which time I saw no more cases for the year. The diseases which prevailed in autumn, were bilious and typhus fevers, and likewise a species of cynanche, which prevailed in a few instances in the fall, and appeared to bear considerable relation to the epidemic fever which had prevailed in the winter and spring preceding.

*Symptoms*—The disease first made its appearance about the middle of August, a few days after a heavy rain from the north-east; during which storm,

a great fall of the mercury happened, viz. from  $91^{\circ}$  to  $54^{\circ}$ , which was a variation of  $37^{\circ}$  in 24 hours. The patient, on the first attack, was seized with shivering fits, lassitude, a peculiar pale and sunken countenance; yet, in general, both he and his friends considered his disease not dangerous, but merely a common cold, or something of that nature, from which he was soon expected to recover: but instead of a recovery, he gradually sunk lower; the tongue swelled, and in some instances could hardly be retained in the mouth. I have been informed, that, in some cases, the tongue was thrust out of the mouth between the teeth, the throat and neck were considerably swollen, and a tough, viscid mucus, was almost continually discharged, or attempts were made to discharge it, from the throat and mouth; and a thin white slough covered most of the throat and mouth. This slough was as white as the whitest paper, and as thin as a wafer;\* and, if removed, it would be re-produced in twenty-four or forty-eight hours. In those cases where the disease terminated fatally, death appeared to be in consequence of suffocation. I heard of a few attacks which were very sudden and violent, the patient's throat, tongue, and neck, swelling in a few hours in some instances, and in others in a day or two, so as to produce suffocation. Though the number of severe cases of this disease were comparatively few, yet there were a vast many people who had the

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\* This was in general the case; but in a few instances very deep mortified spots occurred, which, if the patient recovered, left foul ulcers which were difficult to heal.



disease in a slight degree. It was not so severe with children as with adults. The duration of this disease was in general about 13 or 14 days; but in some instances it terminated fatally at a much later period.

Although the epidemic fever, which prevailed in the winter and spring months, in 1812, within the circle of my practice and observation, like other epidemics, affected the whole or most part of the population of the places where it prevailed; yet its violence was confined to particular situations. The first cases happened on the northern brow of the mountain called Kearsarge; it then prevailed in a direction parallel with that range of mountains called the Ragged Mountains, keeping at the distance of about a mile or more from the foot of said mountains, and from two to three and a half miles from the summit of the first range of these mountains, on a ridge of land where the wind blew with its full strength from the mountains. One remarkable current of wind from the north-west is formed by passing through a notch in these mountains, and sweeps the whole width of the town of Andover, and then strikes the northern brow of a prominence in Salisbury called Rackoon-Hill. Another strong current of wind passes from north-west through a notch which is cut in this mountain by Black-Water river, so called, and sweeps an extensive ridge in Salisbury called Center-Road; but a part of said current of wind is driven down the channel of said Black-Water river, and sweeps its western bank, the eastern declivity of Kearsarge mountain, and the high lands adjacent. There is also an elevated height

of land, called Beech-Hill, which projects into the focus of this current of wind, all of which is swept by this strong current, except a valley which is at the western declivity of said hill, and is pretty effectually secured from the wind by sharp ridges, mountains, and woods. The sun likewise has its full operation on most of the before mentioned places, Kearfarge and this valley excepted. The violence of this disease corresponded with the bearing of the wind and sun very exactly; and its severity was confined to those places where their concurrent operation appeared to be the greatest, except the northerly brow of Kearfarge.

December 1812, and January 1813, as will appear by the tables, were one degree colder than the same months in 1811 and 1812. They were likewise as remarkable for being still, and pleasant, as those months in the preceding years were for being boisterous. The greatest change which happened in December was 30; which is 6°,25 greater than the mean greatest change for this month. In January 1813, the mercury fell 45° in 12 hours, which is 10°,25 more than its mean greatest change in 24 hours.

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*A Synoptical View of the Weather and Diseases, from  
February 1813, to February 1814.*

TABLE 9.

	Febr.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Result
Total heat of the days.	859	1209	1637	1984	2275	2461	2549	2080	1994	1399	889	752	20088
Total heat of the nights	464	618	1028	1419	1603	1927	1932	1762	1413	919	494	477	14056
Mean temperature of the days.	30	39	54	64	75	79	82	69	64	46	28	24	55
Of the nights.	16	19	35	45	53	62	62	58	45	30	15	15	38
Difference of temperature betw. da's & nts	14	19	20	18	22	17	20	11	19	16	13	9	16
Mean temperature of the days and nights.	23	29	45	55	64	70	72	63	54	38	21	19	46
Greatest aeg. of heat.	48	60	70	76	93	94	94	91	63	61	54	34	79
Lowest deg. of heat.	15	11	25	34	44	52	50	41	20	18	3	14	14
Greatest vari. in 24h.	61	61	34	30	41	28	27	30	20	31	28	40	61
Number of fair days.	16	19	18	11	21	16	24	21	17	15	22	20	220
Number of foul days.	12	12	12	20	9	15	7	9	14	15	9	11	145
Number of snowy days.	5	6	2	0	0	0	0	0	1	0	2	2	18
Number of rainy days.	0	3	4	14	8	11	3	7	9	7	3	0	69
Number of cloudy days	7	3	6	5	1	4	4	2	3	5	4	9	53
No. of squally days.	0	0	0	1	0	0	0	0	1	3	0	0	5
North-west.	8	11	12	10	14	14	23	16	13	9	17	20	167
North-east.	0	4	1	1	0	0	1	2	1	2	1	1	15
South-east.	8	4	4	0	1	0	0	4	1	0	2	3	30
South west.	3	2	5	1	0	4	1	0	1	0	1	0	18
North.	3	3	3	1	1	0	0	3	1	4	3	3	24
East.	3	3	4	3	3	1	0	4	4	5	3	3	44
South.	3	3	2	5	10	6	1	6	8	4	1	1	59
West.	0	1	2	0	0	0	0	0	1	0	0	0	8
Diseases which prevailed.	Spotted Fever.	do.	do.	do.	Rheumatism.	Colic.	do.	Typhus noxus.	do.	do.	Abscesses.	Spotted Fever.	

Direction of the wind.

\* Below 0.

*A Succinct Account of the Weather and Diseases in  
1813 and 1814.*


February 1813 was like January in the same year, still, and pleasant, except a few days, on which the wind blew very strong, and was nearly north; the weather was of course intensely cold. The greatest degree of heat, which happened in this month, was  $48^{\circ}$ ; the lowest degree of heat  $15^{\circ}$  below 0. On the 25th, P. M. the thermometer stood at  $46^{\circ}$ ; on the morning of the 26th it had fallen as low as  $15^{\circ}$  below 0; which was a variation, in about 16 hours, of  $61^{\circ}$ . There were likewise several other great variations, which took place in a short time. Fourteen days the wind had a southerly bearing, which alternated with breezes nearly from the north, which caused the changes to be more sensibly felt.—March was not so pleasant a month, but more stormy, as will appear by the table; on the 26th of this month, the snow was four feet deep on a level: no less than six great and sudden changes happened; as great as  $61$ ,  $50$ ,  $35$ ,  $30$ , &c. There were likewise a similar prevalence and alternation of northerly with southerly winds; we had likewise three great rains in this month, which caused the vibration of temperature to have a much greater effect.—April, as will appear by the table, was more than usually mild: but such was the depth of the snow and ice on the 1st of April, the weather in general being warm, such was the chill occasioned by the melting of the ice and snow, and the moisture of the ground, that the nights were extremely chilly until about the 20th, when the snow and ice were entirely dissolved,



and the ground considerably dry; the weather became more temperate and healthy.—May was temperate, but rather rainy.—June was remarkable for several violent changes, and was, for June, a very sickly month: but the diseases which prevailed, viz. spotted fever affecting the limbs, bowels, &c. were much more mild than those of the winter and spring preceding.—The remaining months of this year, were mild and temperate months, and as healthy as usual.—January 1814, as will appear by the table, though comparatively moderate, was subject to considerable variations of temperature; and several cases of fever occurred in this month, the symptoms of which were progressively verging towards spotted fever.

The winter and spring of 1812 and 1813, were doubtless seasons more sickly and mortal than have been ever known since the settlement of this State. In January 1813, cases of spotted fever were said to have occurred in the northerly parts of New-Hampshire and Vermont. About the middle of February, it appeared in an alarming degree in several parts of New-Hampshire. The places which suffered most from the frequency and mortality of this disease, were generally low situations, having a southern declivity, or otherwise enjoying the influence of the sun; and were in general near rivers, ponds, &c. next to these low situations, be their descent in what direction it might. The disease was indeed frequent in almost every imaginable situation; but was so mild, except in the places above mentioned, as rarely to need medical assistance; and in those few

cases that did, it generally terminated favorably, with the exception of persons of very intemperate lives, old people, very bad habits, or such as had suffered extraordinary changes of temperature from being very much exposed. In 1812, the lungs were almost universally effected; and death was caused by suffocation, &c. In all the cases which I witnessed in 1813, the lungs were not so generally affected; the head appeared to be the part which suffered most, and the patients appeared to die in convulsions, apoplexy, palsy, &c.



*A Synoptical View of the Weather and Diseases, from  
Feb. 1, 1814, to Feb. 1, 1815.*

TABLE 10.

[illegible]

*A Succinct Account of the Weather and Diseases which occurred in the years 1814 and 1815.*

FEBRUARY was unusually warm for this climate ; the medium temperature of this month stands marked in the table 26,50 ; its mean annual temperature is marked in the table 22,1.6 ; the greatest degree of heat, as will appear by the table, was  $57^{\circ}$  ; and the lowest,  $12^{\circ}$  below 0 ; the range of the thermometer was  $69^{\circ}$  ; four rains likewise happened in this month, and one of these was immediately followed by a warm thick fog, on the 2d day of February, with the wind in the south-west. On the 31st of January, the mercury stood  $14^{\circ}$  below 0 : on the 1st of February, in the morning, the mercury stood  $1^{\circ}$  below 0 ; in the afternoon it stood as high as  $12^{\circ}$  : the 2d of February, in the morning, it stood at  $25^{\circ}$  ; at night it had risen as high as  $51^{\circ}$  : on the 3d, A.M. it had fallen to  $30^{\circ}$  ; and at night it had fallen to  $2^{\circ}$  below 0 : on the 4th, in the morning, it had fallen to  $12^{\circ}$  below 0. These great and sudden changes of temperature preceding and succeeding a damp and warm air, accompanied with rain, as might be expected, produced some very alarming cases of fever. But the weather soon became very moderate for this month, and continued so until the 1st of March. The mercury rising in the day time as high as  $37^{\circ}$  or  $38^{\circ}$ , and sometimes to  $57^{\circ}$  ; the temperature of the nights, with few exceptions, were as high as  $32^{\circ}$ . Since this favorable change in the weather, the disease assumed a more favorable aspect ; and though cases of it have occasionally happened, they are very mild.



March, as will appear by the table, was of a medium temperature, though comparatively cooler than February. Some great changes happened in this month ; and likewise a few severe cases of fever ; but the number was not so great, nor their fatality by any means so frequent, as in March 1812 and 1813.—April was subject to several great changes of temperature, yet heat predominated ; the mercury fell once at night as low as  $25^{\circ}$  ; but the temperature of the days was at a medium, 55,5, and the nights 37,4. Cases of fever were frequent ; but, with few exceptions, they were very mild.—May, as will appear by the table, was uncommonly warm for that month ; yet the variations of temperature were considerable and frequent ; and the difference between the temperature of the days and nights was very great ; there were likewise twelve rainy days, and four days were cloudy. Seventeen days the wind blew from the sea, which, together with the moisture of the ground, caused the air to be moist and chilly to an uncommon degree ; of course, these changes of temperature were more severely felt, and took greater effect than they probably would under different circumstances. There were many cases of fever in this month ; but the symptoms which attended them were more mild than in the preceding winter and spring months. The head and lungs were not so frequently the seats of the disease ; it more frequently affected the bowels, extremities, &c. in the form of colic, diarrhoea, rheumatism, &c.

June, as will appear by the table, was of a medium temperature, and moderately dry ; but subject

to the most violent and sudden changes perhaps ever known in that month. On the 22d of June, at 3 o'clock, P. M. the thermometer stood, at  $86^{\circ}$  in the shade : on the 23d, at 10 o'clock, P. M. it had fallen to  $41^{\circ}$ , which was a variation of  $45^{\circ}$  in 31 hours. This great change was caused by a cloud which overspread the whole horizon, and a strong north wind : so intense and sudden was this chill, that vegetables, which on the 22d at noon had the most luxuriant and promising appearance that I ever recollect to have seen, in 6 hours after, their leaves withered on their margins, turned white and curled as though they had been singed by a blaze of fire. Several alarming cases of fever took place at this time, and immediately after ; and new cases were frequent for several days ; but their terminations were sooner and more favorable than might have been expected from the violence of the attack. Similar changes of temperature continued to occur about once a fortnight, through the months of July, August, and September, though not in general to so great a degree. On all these changes, or soon after, new cases of the epidemic have been frequent, though they have gradually grown milder, and assumed more and more the appearance of our former autumnal fevers.

In September, a very extraordinary change of temperature happened, which even exceeded in degree that of June, though not so terrific and awful in appearance. On the 2d of September, the mercury stood as high as  $92^{\circ},5$  : on the 3d, at  $82^{\circ}$  : and on the 4th, at 3 o'clock, P. M. at  $88^{\circ}$  : and on

the 5th, at 11 or 12 at night, it stood at  $33^{\circ}$  : at 4 o'clock, on the morning of the 6th, it had fallen as low as  $31^{\circ}$  : which is a variation of  $61^{\circ},5$  in 85 hours, and of  $55^{\circ}$  in 32 hours. This very extraordinary low degree of temperature, at this season, had a very bad effect on vegetation. The usual killing frost, which commonly happens about the middle of October, is not indicated by a fall of the mercury much lower than that which happened on the 6th of September ; and had it not been for a fortunate change of the wind, which took place about 3 or 4 o'clock in the morning of the 6th, it is probable that Indian corn, and all the tenderer vegetables, would have been entirely destroyed. I was abroad on that evening, and observed that the ice on the leaves of the corn was fast dissolving by a warm, moist, south-east wind, some time before the sun could have any impression on it. Some were immediately, on this change, attacked with severe cold shiverings, and several fell sick soon after. Cases of fever, of a mixed type, continued to occur through this month, and the month of October. October was dry, and of a medium temperature ; but suffered considerable changes. On the 6th, in the morning, the mercury stood at  $67^{\circ}$  ; in the afternoon it fell to  $40^{\circ}$  ; and the 7th, at night, to  $32^{\circ}$  ; which was a change of  $27^{\circ}$  in 12 hours, and of  $35^{\circ}$  in 36 hours : several similar changes happened in this month. It was a sickly month. The cases of fever which occurred were gradations of all the shades, from a well marked case of the prevailing

epidemic, or spotted fever, to the true typhus, or nervous fever.

It will be seen, by examining the table of the mean temperatures of the several months, that November was subject to the least variation of temperature, of any month in the year ; and though the changes that it suffered, compared with those that frequently happened in the other months, are but moderate, and nothing uncommon in these very intemperate years ; yet, for November, these changes were great. October was a very dry month, and November unusually wet, which, succeeding dry weather, must have greatly aggravated these changes which happened in November. The wind blew from the south eight days, which, alternating with north and north-east winds, accompanied with severe storms of snow and rain, caused severe colds, fevers, &c. This was particularly the case with those who were exposed. On the 3d of this month, we had a snow storm, which was preceded by a south wind, and was succeeded by an east wind which continued for several days. During this weather, the spotted fever became prevalent, and was very mortal with children from one to seven years old.\* Previous to this time, children were less liable to the disease than adults, and those of them, who had the disease, suffered much less by it, and more generally recovered, than adults.†—De-

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\* I have no knowledge of this disease ever affecting a young infant.

† In the cold and boisterous winter and spring of 1812, males from 14 to 60 years of age were most frequently the subjects of this disease ; women and old people were not so frequently affected by it, and young children were but rarely. This circumstance probably was



æmber suffered considerable changes of temperature for that month ; but they were not attended with so many unfavorable circumstances as were the changes in November. The epidemic continued to prevail through this month ; but with less violence than in November.—January, 1815, was an extremely cold month ; the average temperature of the five last days was  $5^{\circ},8$  below 0, and the nights  $7^{\circ},4$  below 0.

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principally owing to the latter being less exposed to the vicissitude of temperature than the former ; but in the autumn of 1814 we find the disease by far more mortal (though possibly not more frequent) with children, than with adults ; and we should very naturally conclude that children would be more likely to be exposed to those changes of temperature, which occur in summer and autumn, than those which happen in the severity of winter ; it is likewise reasonable to suppose, that their tender fibres would feel the effect of those sudden changes more sensibly than the more firm fibres of adults ; neither are children in general so well provided against the changes which happen in summer and autumn as adults are, as their clothes are generally thinner, and they mostly go without shoes during a great part of those seasons ; they likewise have not that judgment to cover themselves in the night, which from the great variations that sometimes happen, it is indispensably necessary that we should, if we would preserve our health. Dr. Thornton makes the following observation : “ children are so susceptible of inflammation, that a great part of the mortality among them is, as far as I have observed and can judge, to be ascribed to the ignorance of mothers and nurses, of the power which even a moderate change of temperature, if suddenly made, has to affect their tender and irritable frame.”—*Philosophy of Medicine*, Vol. III, page 99.

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Calculation from February 18, 1806, to March 1, 1814,  
shewing the mean of each month.

TABLE -11.

	Feb'y	March	April	May	June	July	Aug <sup>st</sup>	Sept.	Octo.	Nov.	Dec.	Jan'y
Mean temperature.	22,11	31,29	43,72	55,25	68,12	70,51	69,37	60,81	48,	34,06	24,62	17,31
Mean difference of tem- p'ture betw'n d's & n'ts.	13,	18,12	18,87	17,37	16,87	14,62	15,75	14,12	16,12	9,12	8,75	9,25
Mean greatest degree of heat.	48,37	60,87	72,37	81,25	90,	90,25	89,87	82,87	75,	57,12	49,37	41,
Mean lowest degree of heat.	7,75	3,25	20,5	32,87	45,	51,5	48,5	37,87	24,87	16,5	0,2	13,
Range of the thermon- eter.	56,12	57,62	51,87	48,37	45,	38,75	41,37	45,	50,12	40,62	49,35	34,5
Mean greatest variation in 24 hours.	35,53	36,25	34,12	32,	29,62	27,51	28,87	27,12	30,75	23,25	23,75	34,75
Mean number of fair days.	17,12	20,	19,	17,6	17,37	17,87	19,67	22,	22,25	18,62	19,12	19,
Mean number of foul days.	11,12	11,	5,10	13,37	12,62	13,12	11,32	8,	8,75	11,37	11,87	5,11
North-west.	14,62	17,25	12,56	13,75	12,5	14,37	15,75	18,25	14,87	14,37	17,62	16,12
North-east.	2,87	2,75	3,22	3,62	3,12	2,37	2,25	1,12	87	2,12	3,	4,12
South-east.	2,25	2,37	2,30	1,62	2,62	1,75	1,5	2,	1,37	1,62	1,37	2,25
South-west.	2,37	1,12	3,87	5,17	3,62	3,25	4,62	3,12	3,05	5,38	1,6	1,37
North.	2,87	3,12	2,1	1,75	1,37	2,5	2,25	1,12	3,	3,87	2,	2,62
East.	1,51	2,12	3,12	4,35	1,62	2,75	5,5	1,51	2,25	3,87	2,37	4,07
South.	50,00	0,12	0,75	0,00	0,22	0,5	0,12	1,12	3,51	2,25	2,25	0,00
West.	50,00	0,12	0,75	0,00	0,22	0,5	0,12	1,12	3,51	2,25	2,25	0,00

Mean direction of the winds.

\* Below 0.

# MEAN ANNUAL CALCULATION.

TABLE 12.

	1806—	746, 56	16, 5	91	13*	04	39	244	121	286	79	193	35	41	28	16	24	23	5
	1807—	846, 67	21, 18	90	7*	97	55	255	110	267	98	217	32	22	27	8	18	32	0
	1808—	946, 71	11, 34	92	13*	105	43	228	138	264	102	188	29	18	55	16	32	25	3
	1809—	1043, 0	15, 06	87	23*	110	53	216	149	263	102	172	25	28	57	28	32	22	1
	1810—	1146, 8	11, 08	88	12*	100	33	233	152	254	111	182	35	9	14	42	27	19	7
	1811—	1248, 45	13, 45	94	15*	109	34	235	130	269	96	172	42	22	22	23	26	48	0
	1812—	1343, 73	13, 94	93	16*	109	45	214	152	268	98	166	44	21	41	31	15	42	6
	1813—	1446, 75	16, 57	94	14*	108	61	220	145	273	92	167	15	30	18	24	44	59	8
Mean ann.	146, 11	15, 04	91, 12	14, 12*	105, 2	41, 6	230, 6	134, 6	268	97, 2	182, 1	32, 1	23, 8	45, 2	24, 7	27, 2	37, 5	4, 7	
<i>Annual temperature.</i>																			
<i>Difference of temperature between the days and nights.</i>																			
<i>Mean annual greatest heat.</i>																			
<i>Mean annual lowest heat.</i>																			
<i>Mean annual range of the thermometer.</i>																			
<i>Mean ann. greatest va in 24 h.</i>																			
<i>Mean annual no. of fair days.</i>																			
<i>Mean annual no. of foul days.</i>																			
<i>Mean annual no. of dry days.</i>																			
<i>Mean annual no. of wet days.</i>																			
<i>North-west.</i>																			
<i>North east.</i>																			
<i>South-east.</i>																			
<i>South-west.</i>																			
<i>North.</i>																			
<i>East.</i>																			
<i>South</i>																			
<i>West.</i>																			

Direction of the winds.

\* Below 0.

TABLE shewing the mean temperature of several of the United States, and of other Countries.

TABLE 13.

	Latitude.	Longitude.	Mean annual temperature.	Mean annual greatest degree of heat.	Mean annual lowest degree of heat.	Mean annual range of the thermometer.	Mean annual greatest variation in 24 hours.	Mean temperature of January.	Mean temperature of February.	Mean temperature of March.	Mean temperature of April.	Mean temperature of May.	Mean temperature of June.	Mean temperature of July.	Mean temperature of August.	Mean temperature of September.	Mean temperature of October.	Mean temperature of November.	Mean temperature of December.
Michigan . . . . .	45	84	41, 8	86, 5	21*	107, 1	142†	13	14	22, 5	40, 3	48, 1	61	65, 7	72, 2	55, 5	51, 5	33, 5	22, 5
Vermont . . . . .	44	72	43, 3	91, 1	14*	100, 2	21, 6	14, 4	18, 9	28, 5	39, 5	56, 3	66, 6	66, 2	67, 6	57, 1	45, 2	33, 5	24, 7
New-Hampshire . . . . .	43	71	46, 1	91, 1	12	66	23	23, 3	22, 1	31, 2	43, 7	55, 2	68, 1	70, 5	69, 3	60, 8	48, 3	39, 9	24, 6
Maine (Portland) . . . . .	44	69	45, 8	78	3	87	26	29	32	39	41	51	67	74	72	30	51	39	37
(Bewick) . . . . .	43	70	51	30	4			21†	27	29	51, 5	54	63	67, 5	68, 5	51, 7	55, 5	13	29
Massachusetts (Boston) . . . . .	42	70		34															
New-York (City) . . . . .																			
Pennsylvania (Philadel.) . . . . .	39	75	53, 5	93	5	88	35†	35	33	45	51	61	70	72	74	64	51	45	34
Ohio . . . . .	39			90	6*	96		55	55	61	73	75	80	81	81	80	39	88, 5	
Georgia (Waynesboro') . . . . .	32	83		32	32	60													
(Savannah) . . . . .	32																		
South-Amer. (Demerary) . . . . .	6		28, 3	33	80	13		89	87	87	88	87	87	85, 5	85, 5	89, 5	89	88, 5	
Europe—England . . . . .	51	0	54, 2	33	6*	29													
Ireland . . . . .	53	6	49, 9	77	24	53		43	39	11	14	51	59	60	59	59	51	15	39
Germany . . . . .			50																
France (Bordeaux, B. lon.) . . . . .	44	5	56, 8																
Asia (Pekin, China, E. lon.) . . . . .	39	116	56, 5	98	5	93		20	32	18	59	72	84	85	83	63	52	41	27
(Japan, E. lon.) . . . . .	34	146	61, 5	98	35	53													
Africa (Egypt) . . . . .	37		59	83	50	38													
C. of G. Hope, S. lat. E. lon.	34	18	75	100	50	50													

\* Below 0.

† Those figures which are marked thus † in the table are not to be considered as the usual mean annual temperature, greatest heat, greatest variation, &c. but such as have occurred in some particular years.



*Remarks on the annexed Table.*

The mean temperature, &c. of New-Hampshire, was taken from observations made at this place, viz. Salisbury, for eight years; which town, from its central situation and mean elevation, is probably as favorably situated to find the mean temperature of this State, and perhaps of the New-England States, as any town in this or the adjoining States. The thermometer, with which these observations were made, appears, by comparing it with others, to be correct, except that from the shortness of its tube it measures but about  $12^{\circ}$  below 0; but this deficiency has been generally supplied by another kept in this vicinity. The thermometer was placed on the north side of the house, in the open air, and the usual time of observation has been at 6 o'clock in the morning, and between 1 and 3 o'clock in the afternoon; but as the object has been to ascertain the greatest extremes, the time of observation has been varied according to circumstances. The wind and weather, which were most prevalent through the day, are noted.

The mean temperature of Vermont is from the Memoirs of the Connecticut Academy of Arts and Sciences, and from a journal kept near the centre of that State. The mean temperature, &c. of the District of Maine, is taken from abstracts of the weather, &c. by Dr. Jeremiah Barker and Dr. Richard Hazeltine, published in the New-York Medical Repository, Vol. III. Hex. 2. and Vol. V. Hex. 2. Doctor Hazeltine observes, that his thermometer was kept under cover in a front entry facing the east, which circumstance

would make considerable difference in the temperature. Neither Doctor Barker's nor Doctor Hazeltine's accounts are sufficiently particular to make calculations from. The observations at both places were made in 1803. Pennsylvania mean temperature, &c. is for 1787, and is taken from Doctor Rush's Medical Inquiries, Vol. I. page 101. Michigan mean temperature, &c. was made by Captain Richard Whiley, in 1801, 1802, 1803, and 1804, and is published in the New-York Medical Repository, Vol. III. Hex. 2. The statement of the temperature of Ohio is from Doctor Hildreth's account, published in the Medical Repository, Vol. V. Hex. 2. page 345.—90° above and 6° below 0 were the extremes in 1807; but it is not uncommon for the extremes both of heat and cold to be considerably greater in some parts of that State, according to a statement in Drake's Notice concerning Cincinnati, which place is in latitude 39° 7' N. The thermometer on the morning of the 8th of January, 1797, was 18° below 0, (Medical Repository, Vol. III. Hex. 3.) Doctor Hildreth observes, that the weather in the month of June, 1803, at Marietta, (in latitude 39° 24') was rather warmer than usual; as on the 30th of that month the thermometer stood at 98°, 5 in the shade. (Medical Repository, Vol. VI. Hex. 2. page 360.) The temperature of Georgia is taken from Doctor Joshua E. White's account of the climate of Georgia, for 1802. (Savannah ditto.) The temperature of Demerary, or Dutch Guyana, is taken from Doctor Frost's account of the climate of that country, published in the Medical Repository,

Vol. VI. Hex. 2. page 209. The temperature of England is from Rees' Encyclopedia: and of Ireland, from Carr's Tour in Ireland, and is for 1804 only; but is supposed to be very nearly correct. Pekin, in China, mean temperature, &c. is from Doctor Rush's Medical Inquiries. It was calculated from five years observations. Germany mean annual temperature, from Count Rumford. The temperature of France, Egypt, the Cape of Good Hope, and Japan, are taken from Doctor Morfe's Geography. The temperature of Massachusetts is taken from the New-England Medical Journal, and is for 1812 only.

By examining the 13th table, in which the climates of different countries are compared, it will be seen that the degrees of variation, which happen in the course of the year in our climate, are much greater than those that happen in Europe. It is likewise presumed, that the diurnal variations in this country are proportionally greater. Dr. Robertson, in his history of America, Vol. II. page 472, supposes that the difference between the heat in America and the old continent, is equal to  $12^{\circ}$ ; and that a place  $30^{\circ}$  from the equator in the latter, is as warm as one situated  $18^{\circ}$  in the former. Dr. Mitchell also, after observations carried on for 30 years, contends that the difference is equal to  $14^{\circ}$  or  $15^{\circ}$  of latitude. The island of Great-Britain is situated  $11^{\circ}$  further north than New-Hampshire, and yet its mean annual temperature is  $8^{\circ},09$  warmer than the mean annual temperature of this State. Munich in Germany is

situated in latitude  $48^{\circ}, 10$  north ; its mean annual temperature is  $50^{\circ}$ , which is 3 ,89 warmer than the temperature of this place. Yet it is supposed that our summers are hotter than those of Europe, even in the same parallel of latitude. Mr. Henry Ellis, F. R. S. who was Governor of Georgia in 1758, had visited the equatorial parts of Africa at different times, and made observations on the temperature of that climate : he states, that on the 17th of July, 1758, the mercury stood as high as  $102^{\circ}$  ; and that twice that summer, it had risen to the same height : that in Africa, the same thermometer did not rise but to the 87th degree, and to that but seldom. He observes, “ I think it highly probable, that the inhabitants of this place, (viz. Savannah in Georgia), breathe a hotter air than any other people on the face of the earth.” Mr. Leavenworth likewise, who has written a treatise on the seasons of the northern temperate zone, considers the winters to be colder, and the summers hotter, on this continent, than in Europe.

In Asia the seasons appear to be more variable. The range of the thermometer is greater in Pekin than in Philadelphia ; yet, for several reasons to be mentioned, it is doubted whether the diurnal variations are so great at Pekin as at Philadelphia. Near the equator, where the difference in the length of the days is but small, the variation in the seasons is likewise inconsiderable, not often exceeding  $15^{\circ}$  or  $20^{\circ}$ . In the island of Great-Britain, though its situation, considering its high latitude, is very favorable, the greatest extremes that I can find re-



Recorded are from  $83^{\circ}$  above to  $6^{\circ}$  below 0 : but this variation of  $89^{\circ}$  did not happen in the course of the same year ; probably the mean annual variation is not so great by  $20^{\circ}$ . In Ireland the mean annual variation is but  $53^{\circ}$  : the diurnal variations I have not been able to ascertain. Dr. White, of Savannah in Georgia, observes, that the difference between the coldest day in January 1805, and the hottest day in July of the same year, was  $80^{\circ}$ . Dr. Ramsay, in his Sketches of South-Carolina, notices a variation of  $83^{\circ}$  between the heat and cold of the same year ; and a difference of  $46^{\circ}$  between the different hours in the same day. Dr. Rush mentions a change of  $41^{\circ},5$  in 24 hours. At the island of Michilimakinak, a change of  $42^{\circ}$  happened in 24 or 48 hours, in 1803. In this State, a change of  $61^{\circ}$  happened in 1813, in 24 hours, which is  $8^{\circ}$  greater than the mean annual change of Ireland. The exceeding low mean temperature of these States, considering their latitude, is very remarkable ; the obvious cause of which is found in the figure and situation of this continent ; which is widely spread, broad and very extensive, towards the north pole ; but very contracted near the  $30^{\circ}$  of north latitude. Taking into view the large extent of bays and lakes of fresh water on the north, viz. the Gulf of St. Lawrence, Hudson's and Baffins Bays, &c which extend from Greenland and Iceland to about the  $50^{\circ}$  of north latitude, and the  $90^{\circ}$  of west longitude, the supposition is natural, that the temperature of the seasons, particularly in the north-eastern States, should be materially affected by these waters. The freezing of

these lakes and bays directly tend to moderate the temperature of the two latter fall and first winter months; and the vast consumption of heat which must necessarily be taken up to dissolve the ice in these bays and lakes in the spring, must greatly protract the warm season in the New-England States, since our north, north-east, and north-west winds, blow from these frozen regions. In the months of March, April, and May, 60 days out of 92, and if we add the easterly winds of those months, which appear to be a current of air from the same source, turned westwardly by the trade winds, it will amount to nearly three-fourths of the time in the spring months, that these cold winds blow over this part of the country; though the influence of the sun is very considerable. It is in the months of March, April, and May, that we usually suffer the greatest and most frequent changes of temperature, as will appear by the tables; and in the months of November and December we usually suffer the least variation of temperature. The temperature of these months is doubtless considerably moderated in our latitude, by the heat which is disengaged by the congelation of this immense extent of lakes, bays, &c. The effect, which the winds from these northern regions have on the climate of the eastern part of this continent, will appear more evident, by examining the 13th table, where the climates of different places are compared. The city of Philadelphia being situated more than  $3^{\circ}$  south and nearly  $6^{\circ}$  west of this place, will consequently escape much of the unhappy effects experienced from those chilling blasts which in the

spring pass over the frozen regions of the north-west, generally bearing a south-easterly direction. The current of air from the westerly part of Hudson's Bay only will usually reach Philadelphia; yet this appears to have an unfavorable influence upon the climate, as may be seen by comparing the spring, last autumnal, and first winter months, with the temperature of the same months at Pekin, the capital of China, situated in nearly the same parallel of latitude. In Pekin, the mean annual temperature of March is  $48^{\circ}$ , of April  $59^{\circ}$ , and May  $72^{\circ}$ ; in Philadelphia, the temperature\* of March is  $45^{\circ}$ , of April  $54^{\circ}$ , and May  $61^{\circ}$ ; which is a difference, in the first, of  $3^{\circ}$ ; in the second, of  $5^{\circ}$ ; and in the third, of  $11^{\circ}$ . In Pekin, the mean temperature of November is  $41^{\circ}$ , and of December  $27^{\circ}$ ; but in Philadelphia the mean temperature of November is  $45^{\circ}$ , and of December  $34^{\circ}$ ; which is a difference in the first, of  $4^{\circ}$ , and in the second, of  $7^{\circ}$ . The south-west wind in Philadelphia produces the greatest heat, and the north and north-west the greatest cold; in Pekin, the south-west, south, and south-east winds, produce the greatest heat, and the north, north-east, and north-west winds, the greatest cold. By casting your eye over the map of Asia, you will see that the same causes do not exist, to any considerable degree, which we suppose do so considerably diminish the temperature of our spring and first summer

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\* It appears, from examining the meteorological tables in Dr. Rush's Medical Inquiries, Vol. III. pages 216 and 217, and a statement of the mean temperature of April for 1783, Vol. I. page 102, that the mean temperature of March, April, and May, in 1787, as stated in the table for Philadelphia (though nearly correct) is sufficiently high.

months. Likewise, on the continent of North America, after passing the 95th degree of west longitude, the collections of water are not so considerable in the high latitudes ; of course, the spring is found more moderate as you travel towards the west,\* though the winter may be equally as severe, or more so, in the same parallel of latitude. The lakes are too inconsiderable, and too far to the south, to have any material effect on the temperature of the continent, except those parts which lie immediately in the neighborhood of them. Michigan, Superior, and Huron, are the most considerable of the lakes, and they lie so contiguous as to form, as it were, but one collection of water. Near the centre of these lakes lies the island of Michilimackinack. The climate of this island, situated as it is, must be very materially affected by these lakes, especially in the spring and fall, as will appear by comparing the temperature of this island (see Michigan in table 13) with the temperature of other parts of this continent, and more especially with parts of the other continents.

One of the most important causes of the peculiarity of our climate remains to be considered ; which is the south, south-west, and west winds. These winds are supposed to be derived from the trade

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\* On examining some meteorological observations in Dr. Rush's Medical Inquiries, Vol. I. page 107, made at Spring Mills, 13 miles north-west of Philadelphia, and at Pittsburg, 234 miles west of Philadelphia, lat.  $40^{\circ} 31'$  N. we are shewn, by his Table, that the first fifteen days of April, 1788, were on an average  $6^{\circ}, 333$  warmer. The weather during these days, as to their being rainy, or overcast, were nearly equal ; and the wind as much so as the different situation of the country will often admit. Southerly winds are more prevalent to the westward than they are to the eastward,



winds. These winds arise on the continent of Africa, from the extreme rarefaction of the air of that country. In consequence of the great heat and drought which prevail in that quarter of the globe, its air is greatly rarified ; and its specific gravity of course diminished. The more dense air from the west of Asia, and the east of Europe, meeting with the least resistance in Africa, rushes into that quarter, and forces the lighter and more rarified air of Africa on to the Atlantic ocean. The resistance, in this part, being the least from the earth's diurnal revolution; or the attraction of the sun and moon, or some other cause, it passes on in this direction ; and the same causes continuing to operate on the continent, it is followed by a continual current of air, which passes the Atlantic ocean, and falls into the Bay of Honduras and the Gulf of Mexico. But here its progress is opposed by the continent of North America, and particularly by that chain of mountains called the Andes. And here this current splits, and forms two curves ; one passing southward, and the other northward. The last is our south wind ; but this current being opposed in the west by the continuation of the Andes and Shining mountains, and its progress being checked at the northward by the more dense air of this continent, it turns eastward and northward, forms our southwest wind, and finally is driven by our northwest wind eastward, and re-crosses the Atlantic ocean to the continent of Europe ; and from Europe it passes to Africa, forming a complete round of circulation. But the direction which the northerly

branch of the trade wind takes, is subject to considerable variation : the gravity and quantity of our north wind are sometimes such as to arrest its progress, and force it across the continent, or into the southern branch of the trade wind, at which times it will progress in a westerly or southerly direction, and re-cross the Atlantic, or return to Africa by the Pacific ocean ; and consequently a portion of our north or north-west wind will be drawn away with it ; the effect of which would produce with us a north-east or easterly wind. Our easterly gales and storms commence in the south and west, and gradually progress to the eastward and northward. It is a fact, that our easterly storms sometimes commence blowing at the city of Washington, a day or more before they reach this place.

The gravity and quantity of the trade wind are sometimes so great, as to force its way northward as far as the 50th degree of north latitude, and perhaps even to the 60th or 70th\* ; but finally, its prog-

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\* The parts about the north pole most probably are supplied with air from the south-west, or from an upper current of air which is said to rise in the equatorial regions, and blows northward and southward even to the poles, while we have an under current which occasionally blows in an opposite direction. This last opinion, though very generally received, is liable to several objections, although we occasionally see the clouds moving in an opposite direction to that of the wind, yet those opposite currents of air do not appear to be permanent, but merely denote a shifting of the wind, which in general soon takes place. It appears to be near the surface only that those causes operate, on which the circulation of the air principally depends. It is a fact well known, that as we ascend in the atmosphere, whether in balloons or by climbing mountains, it uniformly grows colder ; and at the height of about four miles, (in all climates) it is a region of eternal frost. The truth appears to be, that the heated air, from some opposing cause, does not very generally ascend, nor the cold air descend ; the consequences, which most probably must attend either, would be very serious.

refs will be arrested by the north wind of this continent, and then it will pass eastward with a portion of the northwest wind of this continent, to Europe. The trade wind is subject to considerable variation from the seasons. Its principal current observes a similar line with the sun ; in the winter, it falls southward to the Bay of Honduras, or still farther south ; and in the summer, northward as far as the Gulf of Mexico.—This wind originating on the continent of Africa, and passing the Atlantic ocean near the equator, arrives to this continent abounding with heat and moisture ; and alternating with the northerly winds of this continent, it is evident it must be a powerful mean of increasing the changes of our climate. It probably is from the moisture of this wind that our country is subject to such great rains ; and these rains, from the heat which is absorbed by their evaporation, very considerably diminish the temperature of our climate ; and are powerful means of increasing the changes of temperature. The number of wet days are not so great in this country as in Europe ; but the quantity of rain which falls in this country is greater than the quantity that falls in Europe. The number of dry days in this country are to the number of wet days nearly as four to one. In England, the proportion of the dry days to the wet, is not quite two to one. In Ireland, the wet days are to the dry as two to one. Yet more rain falls in the United States, than in either of those Islands. On the continent of Europe the proportion of fair weather is said to be greater. That a

very considerable change has happened in the temperature of our climate, is to be seen in several parts near the north pole, particularly in Greenland and New-Britain. "East-Greenland, though formerly visited with but little difficulty, is now inaccessible by sea, by reason of the vast quantities of ice that surround those parts. The same alteration in the climate of New-Britain is visible. The forests are surrounded with a circle of dead stumps and dead trees, 20 miles or more in diameter. This shows that snow and frost are more powerful now than formerly. Where the sturdy forest rose, not a shrub now is seen."

See the above in Morse's Gazetteer, in his account of Greenland. Greenland is said to have been blocked up with ice nearly 300 years ; it would seem as though the destruction of the forest had been of later date. What is the cause of this change is difficult to determine ; had it proceeded merely from the fortuitous drifting of the ice to this part, we should not suppose that it would have continued there so long.—It is the opinion of several well informed and judicious writers, that this continent, at some former and remote period of the world, has undergone a very important change, particularly the south-west part. It is possible that this change in the continent might effect a change in the currents of air, which proved unfavorable to the climate near the north pole.

We should suppose, from some remarks made by the first European settlers, that some extraordinary change had happened in the climate of this country,



about the time of their emigration into it, particularly from the uncommon mortality which at that time prevailed among the natives: yet the period is so far distant, and so little has been written, that at this period it is difficult to obtain any correct account of the climate. Doctor Williams, in his history of Vermont, page 47, makes the following remark.—“Upon looking over the most ancient history of New-England, the only one that will give the most distant information on the subject, is the following passage, referring to years previous to 1633. “The extremity of this cold weather lasteth but for two months or ten weeks, beginning in December; breaking up the 10th day of February, (21st new style) which hath become a passage very remarkable, that for 10 or 12 years the weather hath held himself to this day, unlocking his icy bays and rivers, which are never frozen again the same year, except there be some small frost, until the middle of March.” In the year 1782, the harbor between Boston and Charlestown was frozen over to such a degree, that teams passed for five or six days; this was the beginning of such an effect, as that mentioned in the account: during that time, (says our author) I found the lowest degree of F. S. to be  $9^{\circ}$ ; the highest  $28^{\circ}$ ; the mean  $19^{\circ}$ . It may be presumed, that the freezing of the bay, spoken of above, could not have taken place in a less degree of heat than this. By my observations, from 1780 to 1788, I found the mean heat in December to be  $29^{\circ}$ , January  $22^{\circ}$ , February  $23^{\circ}$ .”—From the above statement it appears, that the waters, from

1780 to 1788, were  $11^{\circ},33$  warmer than in the ten or twelve years next prior to 1633.

It is stated in the New-England Chronology, that the Penobscot tribes in the east, and the Narraganset tribes in the west, escaped the plague which prevailed from 1616 to 1630. As almost the whole face of the country was at that time covered with a thick wood, except some small patches on the seashore, we could not suppose the winds to pass so freely through them, or the changes of temperature to have been so great in the interior, as in the present state of things. In that state of the country, for several obvious reasons, (some of which we shall soon state) the strongest winds and the greatest changes of temperature might reasonably be expected to have happened near the sea; the effects of each of these, which could not be very extensively felt in-land, must have been very much abated before they had reached any considerable distance from the sea. There is no portion of the United States, where we should suppose that so great changes would have happened at that period, as in that tract of country from York in Maine to Narraganset Bay. The north and north-east winds, which were doubtless very prevalent at that period, would sweep all that tract of country which lies near the shore; and the south wind doubtless was sufficiently strong to reach the opposite shore. These causes operating, as we should suppose they would at that period, might reasonably be expected to have produced very great and sudden changes. That the cutting away the wood of a country should consid-

erably alter its climate, is a thing so obvious, that argument seems useless. That it will make it subject to greater changes of temperature, appears to be allowed by all ; but that it will have any effect in moderating its climate, is denied by very respectable authority. Noah Webster, Esq. makes the following observations on this subject. See the account in the New-York Medical Repository, Vol. I. Hex. 3. page 369.

“ It appears to me extremely unphilosophical to suppose any considerable change in the heat or cold of a particular country. We have no reason to suppose, that the inclination of the earth’s axis to the plane of its orbit has ever been varied, but strong evidence to the contrary. If this inclination has always been the same, it follows, that the quantity of the solar rays falling annually on any particular country must have always been the same.—Should these data be admitted, we are led to conclude, that the general temperature of every climate, from the creation to this day, has been the same, subject only to small annual variations from the position of the planets in regard to the earth, or the operations of the element of fire in the globe, and its atmosphere. The real truth seems to be, that when a country is covered with forest, the vibrations in the temperature of the air and of the earth, near the surface, are less numerous, and less considerable, than in the open country.” “ Doctor Williams has furnished the data, by which to determine this point. In 1791, he found an open field frozen to the depth of three feet five inches ; at the same time in a forest he

found the temperature of the earth to be  $39^{\circ}$  by Fahrenheit,  $7^{\circ}$  above frost. This fact solves the question here discussed. While a country is covered with trees, the face of the earth is never swept by violent winds ; the temperature of the air is more uniform than in an open country ; the earth is never frozen in winter, nor scorched with heat in summer ; and snow that falls in November usually lies till March or April, although the earth below is not frozen, but gradually melts the snow, and absorbs the water. On the other hand, an open country is exposed to violent winds, and frequent and great changes of weather. Probably as much snow falls in an open country as in a forest ; or if the clearing of a country converts more of the vapor into water, yet it is liable to more extreme cold, which preserves a balance in the temperature. That these are facts, every man knows, who has observed the difference between the open country and the forest in our old settlements.”—“ And Dr Williams has given the result of meteorological observations, which confirm them, and disprove the common theory of a moderation of cold. In page 30 of his History, he states the difference between the heat of the earth in an open field, and in the woods, during the summer ; by which experiments it is demonstrated, that, from the latter part of May to the close of August, the open country sustains about  $10^{\circ}$  of heat beyond that of the forest ; the thermometer being sunk ten inches below the surface of the earth. At another time he found the winter temperature of the earth in the forest to be  $39^{\circ}$ , while in the open field the earth



was frozen. The vibrations, therefore, in the temperature of the earth, when cleared, are found to be much greater than when covered with wood. The differences, according to Dr. Williams, are as follows—

*Winter temperature of the earth in the woods, in*

*Vermont, - - - - - 39°*

*of the open field at frost, 32°*

*Summer temperature of the earth:*

	In the open field.	In the forest.	Difference.
May 23	50°	46°	4°
28	57	48	9
June 15	64	51	13
27	62	51	11
July 16	62	51	11
30	65,5	55,5	10
Aug. 15	68	58	10
31	59,5	55	4,5
Sept. 15	59,5	55	4,5
Oct. 1	59,5	55	4,5

“From the above observations it results, that, in the winter the earth of the forest is several degrees warmer than in the open field ; and in the summer, it is, on an average, from May 23d to August 31st, 9°,25 colder; and on an average from May 23d to October 1st, 8°,25 colder ; that is, the variations in the forest temperature of the earth are between 39° and 58°, only 19° difference between winter and summer ; while the vibrations in the temperature of the open country are between 32°, or frost, and 68°, making a difference of 36° between winter and summer.

“The vibrations of the temperature of the air are more considerable; but it is an unquestionable fact, that they are much greater in the open country than in a forest; and so far is it from truth, that the clearing and cultivation of our country has moderated the rigor of our cold weather, that the cold of our winters, though less steady, has been most sensibly increased. There is not a greater amount of cold during the winter, but the cold at times is more severe, than before our country was cleared. The difference is so sensible as to be a subject of popular remark among aged people. Another effect of clearing the country is to distribute the cold of the year more unequally; hence fruits are more exposed to spring frosts. This is a most serious inconvenience in Europe, and is becoming so in America. The reason of variable and late springs is obvious; while the earth is covered with wood, it is never frozen; and as soon as the snow is dissolved in the spring, vegetation begins. In an open country, after the snow is melted, the earth is to be thawed, and the heat of the air, for two or three weeks, is incessantly absorbed by the earth and water, while the frost is dissolving; hence the heat of a warm day in the spring is soon absorbed, and cold succeeds. This alternation must continue till the earth is warmed. If the winter temperature of the earth in a forest is  $39^{\circ}$ , and that of the open country  $32^{\circ}$ , we may easily conceive what an immense quantity of heat it must require to raise the temperature of the open field to that of the forest. It must demand nearly all the heat excited by the solar rays in April; so

that in our open country the earth is probably not warmer on the last of that month, than it was, when a forest, on the first of the month.”\*

The above we consider to be the principal and permanent causes which have effected a change in

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\* Mr. Webster's inductions appear conclusive, and doubtless his statements are correct, so far as they relate to the vicissitudes of our climate, the backwardness of the springs, &c. but there is one important circumstance which Mr. Webster appears to have overlooked, viz. the effect which the winds have on our climate. That the heat of Africa is transferred to this country by the trade winds, we have considered; and also that the cold air about the north pole is opposed to this wind, and is the principal cause of the great change in our climate. Those two currents of air appear to have a great effect in modifying the temperature of this continent. We have likewise ascertained, that the western part of this continent is more temperate than the eastern, particularly in the spring. It is a fact, which no one can doubt, that the southern extremity of this continent is much warmer than the northern; of course, in the same proportion that the wood is removed, and the free circulation of the air thereby promoted, the climate in the north will be moderated; while that of the south will be made cooler, which appears to be the fact. Governor Ellis informs us, that the heat at Savannah in Georgia, in July 1753, was several times as high as  $101^{\circ}$  and  $102^{\circ}$ ; but Dr. White, speaking of the temperature of the same place, observes, “The greatest heat we had last year (1804) was but  $94^{\circ}$ , and that but once; from  $84^{\circ}$  to  $90^{\circ}$  were the usual variations—but this was reckoned an extraordinary hot summer.” (See the account in the Medical Repository, Vol. III. Hex. 2. page 356.)—A similar change is said to have happened in the State of South-Carolina. The obvious effect of the extensive and uninterrupted circulation of these winds, and their consequent alternation one with the other, is to render our climate more changeable for a series of years. From the cold air in the north passing to the south in a much shorter time than formerly, there would of course be a greater degree of cold experienced in these parts; and likewise the warm and usually damp air in the south would pass towards the north in a much shorter time, in greater quantity, and much farther towards the north, than formerly; and of course the heat will be more intense, and the changes of temperature will be greater from the alternation of cold and heat; but that their operation will be more extensive, and that heat and cold will be more equally distributed over the continent, is plain: and if this continent is proportionably colder than the eastern continent, will not the more free circulation of the air from one continent to the other tend to make the temperature more equal? And may not the sources of cold about the north pole be diminished by the operation of the above causes, or at least in those parts that are south of  $70^{\circ}$  of north latitude? In the North Sea, it is supposed that other causes now operate to moderate the temperature, (see Count Rumford on this subject) and thereby the temperature of our climate would be moderated, and its changes become less considerable.

our climate. These are accompanied by other concurring circumstances, which occasionally tend to aggravate their effects. From the year 1630 to about 1793, their operations were kept so far within bounds, as not materially to affect the health of the inhabitants of these States to any considerable degree. About the year 1793, a series of hot summers commenced; probably the extensive clearing of this country to the south-west might favor the circulation of the winds from the south, and thereby aggravate the heat of those summers; which, with other concurring circumstances, (which have already been mentioned) is considered to have produced that fatal disease, the yellow fever, which prevailed in a greater or less degree till 1806. In the year 1804, a new era, as respects our climate, appears to have commenced; until this time, heat had predominated, as will appear by examining the meteorological tables kept during that period.

This great change commenced about the 7th of September, 1804; it was first felt in the south-west, in the State of Georgia, and was the most tremendous storm of which we have any account. It blew from the north and north-east with a degree of violence heretofore unheard of. The severity of this storm was principally confined to the southern States.

On the 9th of October, a similar disturbance of the atmosphere happened in the north-eastern States; the wind was principally from the north-east. This storm was very remarkable for its length and severity; it was likewise attended with a fall of snow to the depth of nearly two feet in some places; the



wind blew extremely hard, and did great damage; perhaps two such storms were never before experienced in this country since its first settlement.

During the remaining part of October and November, there was no remarkable agitation of the atmosphere; but from about the 20th of December till about the 10th of February, it blew almost a constant gale from the north-west, north, and north-east; perhaps so severe a winter has been rarely experienced. After the 10th of February, the weather moderated, and March was a remarkably calm month; but such was the quantity of ice in the northern seas, and of snow at the north-west; that the air was rendered extremely chilly.

Might not the extensive clearing of our country of its wood, particularly towards the west and north-west, the progress of which had been extremely rapid for about 20 years prior to this period, together with the succession of moderate winters (with some exceptions) and warm summers for about 12 years, have so rarified the air in these parts as to disturb the equilibrium, and thereby cause this extraordinary precussion of the atmosphere from the north?

In 1806, the sun suffered a very extraordinary eclipse, during which the mercury in Fahrenheit's thermometer fell several degrees in some places; this must have produced a real diminution of heat.

The aforementioned circumstances appear to have been the principal causes which have effected the late change in our climate. The superabundant rains which have attended the late irregular and cold sea-

fons, must be considered as a consequence of this change.\*

The effects which the late vicissitudes of our climate have had on the vegetable kingdom, are very remarkable, and have been mentioned. The animal kingdom has not escaped without sensibly feeling the effects of those great changes ; many were frozen to death, particularly small animals, as fowls, &c. ; the hoofs and horns of cattle were frozen, and diseases of these parts have been frequent, and sometimes important. A disease, called by the farmers the *Black Leg*, has been very frequent. I understand it affects only young cattle. This disease appears to be an effusion and mortification, which is generally confined to one limb of the beast ; and from this circumstance it has its name. A disease of the hoofs and horns of cattle has likewise been frequent in some places ; it appears to be an effusion of blood, or bloody serum, between the flesh and the hoof. The mode of treatment in this disease is to cut off the point of the hoofs, so that the matter may be discharged ; this is said to effect a complete cure. In the winters of 1812 and 1813, a great mortality prevailed among sheep, particularly among the merinoes. Horses have been remarkably subject to colds and cough ; and likewise a very profuse discharge of saliva from the mouths of horses has been

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\* It will be understood, that the same causes which favor the circulation of the northerly winds, will likewise favor the circulation of the southerly winds, which bring heat from the equatorial regions towards the north. For these reasons, I cannot renounce the comfortable hope, that our climate will ultimately be ameliorated.

very prevalent.\* The effect which those changes have had on the human species, we considered in the history of the climate and diseases of this country.

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*Conclusions from the foregoing Statements.*

It appears from several statements, that this continent is colder than Europe, or even Asia. The particular causes of the severity of our climate we have considered.—It is likewise believed, that our summers are hotter than in most countries in the same parallel of latitude. The annual variation of the temperature of our climate is greater than that of any other country, in the table; and for several reasons, it is highly probable, that the *diurnal* variations are proportionably greater.—Yet the vicissitudes of our climate do not appear to be attended with any important disadvantage, except when they go to great extremes. The air of the New-England States is in general considered more dry than that of Europe; and our north-west winds are peculiarly refreshing in summer; and for particular reasons, it is doubtful whether a more invigorating breeze is to be enjoyed in any portion of the globe, than is afforded us by our west and north-west winds. The very rapid increase of population, the strength, agility, stature and complexion of the inhabitants of these north-eastern States, are sufficient evidence of the salubrity of our climate. But of late the changes of

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\* This discharge some think may be attributed to a certain herb, not uncommon in our pastures, since the commencement of our wet seasons, called *Lobelia*.

our climate have been so extraordinary, and the effects of those changes so obvious, that we are constrained to believe that these great changes of temperature have had an important effect in producing the present epidemic, if not the principal cause.

The study of our climate appears to be an important *desideratum*. However well European authors have written on the diseases of their climate ; yet, as our climate is different from that of all other countries, it is reasonable to expect that our diseases should likewise differ ; from which circumstance, it is apparently improper to depend on foreign countries to instruct us in the management of those diseases which are generated by the peculiar nature of our own climate.—Dr. Moseley, in his Treatise on Tropical Diseases, makes the following remark : “ All the infallible precepts I have seen, that have been published on West-India fevers by English writers, are fortunately by colonial practitioners considered as cold northern productions which cannot stand the climate of the torrid zone.”—Dr. Rush observes, in the Preface to his Medical Inquiries, Vol. I. “ For the departure in the modes of practice adopted or recommended in these Inquiries, from those which time and experience have sanctioned in Europe, and in the East and West Indian countries, the author makes the same defence for himself that Dr. Baglivi made near a century ago, of his modes of practice in Rome : “ *Vivo, et scribo in aere Romano,*” said that illustrious physician. The author has lived and written in the climate of Pennsylvania, and in the city of Philadelphia.”



*The Remote or Predisposing Cause of Influenza and Spotted Fever.*

EPIDEMICS, which are wide spreading and extensive diseases, must depend on a cause or causes, the operation of which is as extensive as the disease. There are some diseases of this description, which are produced by contagion, as the small pox, measles, and some suppose the plague. There are other diseases which are more limited and circumscribed in their operation, as the intermittent fever, jail fever, &c. These are undoubtedly produced by some particular cause, which is of a more confined operation, as miasmata, or marsh-effluvia, &c.; putrid air in prisons, ships, and occasionally in the confined streets of cities; these last are more frequently called endemic diseases. But epidemics, such as the influenza, plague, &c. the remote or predisposing cause of which is more doubtful, have been supposed to depend on a certain state of the atmosphere; not particularly as respects its temperature, or moisture, nor are its sudden changes of temperature, or any other sensible quality, considered as the cause; but a certain undescribed something that floats in the air. That which we have no evidence of, nor know nothing concerning from its effect in producing these diseases, Hippocrates, the father of physic, called a divine *something* which floated in the air.

Pestilence appears to have been regarded by the ancients as a peculiar dispensation of Providence; and that it is, in some instances, we have the authority of the sacred writings; as in the following

passage—"When I command the pestilence that walketh in darknefs." Any disease, the cause of which is concealed from our view, may be said to "walk in darknefs;" but this does not appear to have been the principal circumstance: this pestilence is personified as in the following passage, 2 Samuel xxiv. 16: "The Lord repented him of the evil, and said to the angel that destroyed the people, It is enough; stay now thine hand." From the above account, there appears to have been something peculiar in this pestilence: it did not appear to depend on second causes, as we conceive pestilence usually does; but on the immediate operation of some supernatural cause. Though sword and pestilence, frost and mildew, and every other evil, may really be considered as a chastisement of Providence for our offences; yet we conceive that they are commonly the effect of second causes, many of which are obvious; and it is sometimes in our power (and our duty) to avoid them, or obviate their effects.

The symptoms of catarrh, (or colds) influenza, and spotted fever, are so similar in many respects, and the causes, or rather cause, on which they depend, are so similar, viz. the changes of climate, which appear to produce one of these diseases in one place, and the other in another place, at the same time; as has been shewn in the history of our climate in 1807, and likewise in several other seasons—the symptoms of those diseases are so similar in several respects, and the causes on which they depend appear invariably to be the same, viz. great changes of temperature; we may, I think, from

the above data, fairly make the following conclusion, That the predisposing cause of the aforementioned diseases, are the variations of temperature; also that those diseases are produced, and vary in degree, in proportion to the intensity and frequency of these changes.\* But the question has been asked, whether we have not experienced as great or even greater changes of temperature, without producing any important disease? The examination of the history of our climate and diseases will be a sufficient answer to this question.

But, if similar changes of temperature should ever occur, attended with similar circumstances as respect the climate and inhabitants, without producing some serious disease, it will be a conclusive evidence that this disease depends on some other cause than change of temperature: yet the occurrence of such an event, to me would be as unlikely as for our orchards to suffer the same variation of temperature which they have for several years, in every respect, without any important injury to them in consequence. The animal system has the peculiar property of generating heat, and thereby preventing a

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\* Mr. Volney, an European writer, who visited this country, and wrote a treatise on the climate, &c. makes the following remarks on those diseases which he considered peculiarly to afflict the inhabitants: "Catarrhs, or Colds, as the speakers of the English language call them—In this disease, the coughing, wheezing, asthmatic and other pectoral disorders, are indeed so violent and frequent, that in legislative bodies the voice of a member in debate is sometimes nearly drowned in the (not disrespectful) hemming and hawking of his hearers: and in churches, the reading of the service, and the preaching of the sermon, are greatly disturbed by similar interruptions. As far as the bills of mortality, kept at New-York, and at Portsmouth in New-Hampshire, go, they teach us that almost one fifth of the people at those two places die of consumptions."

diminution of its temperature : this property, however, is subject to certain laws, and confined within certain degrees of variation : it likewise has the property of resisting heat to a certain degree. There is a power inherent both in animals and vegetables, to withstand cold and heat, within certain degrees : this property is more remarkable in animals than vegetables ; yet vegetables are capable of suffering a greater diminution of their temperature, without material injury, than animals : but neither can withstand these changes beyond certain degrees.—Heat has the property of expanding a body in every direction, by penetrating the body, and removing its particles farther from each other ; but as the temperature of the body is diminished, its particles approach each other, and its dimensions are diminished in every direction in the same proportion. That every body, whether animal or vegetable, suffers such changes in consequence of a variation of its temperature, is evident ; for, when great changes are experienced in a short space of time, bodies, both vegetable and animal, suffer disorganization and death. Is this disorganization in consequence of the fluids being more affected by those changes than the solids, and of course bursting the vessels in which they circulate ?

Great extremes of heat, or cold, immediately extinguish both animal and vegetable life, and in those extremes of temperature which are compatible with life ; yet if the transition from one to the other be sudden, life is destroyed in consequence ; it appears to require a certain time for the system to



accommodate itself to those changes. The system, in a year, or a month, may accommodate itself to a change which, was it to happen in a day, or an hour, would extinguish life.

Another objection to this conclusion is, that as great changes of temperature are felt over a great extent of country, so likewise these diseases, if they were caused by a change of temperature, ought to be as extensive as the cause. But is not the most superficial observation sufficient to satisfy us, that the changes of temperature are very unequally felt in different situations, and even in the same vicinity? Some places experience a much greater degree of cold than others, as is to be seen after frost that affects fruit, corn, &c. Yet our changes of temperature are subject to greater variation as respects the same situation, than frost. Sometimes they will be felt most severely on the hills, at other times in the valleys; sometimes on the southern descent of hills, and at other times on the northern. To ascertain this circumstance, I made the following experiments.—Observations made in 1815, at my house near the centre meeting house in Salisbury, and on the north-west brow of Kearsarge mountain, which is in the town of Wilmot, distance about six miles, and its elevation may be about 2600 feet above this place. The thermometers were observed at both places at the same time, viz. ten minutes before sunrise, and three o'clock, P. M.



TABLE 14.

*Meteorological Observations, made on the north-west brow of Kearsarge Mountain, and at Salisbury, in New-Hampshire.*

	Kearsarge.		Salisbury		Kears.		Salisb'ry		Kearsar.	Salisbur
	10 minutes bef. sunrise	3 o'clock, P. M.	10 minutes bef. sunrise	3 o'clock, P. M.	Morning.	Evening.	Morning.	Evening.	Variation in 12 hours.	Variation in 12 hours.
1815.										
Jan. 22	11	16	12	20			1	4	5	8
23		9	11	12				3		1
24	2,5	2,25	6,5	13,5			4	11,25	0,25	7
25	13	20	10,5	25,5	2,5			5,5	7	15
26	4	1*	7	8			3	9	5	1
27			1,5	6						4,5
28	5*	10	8*	14	3			4	15	22
29	6*	7*	0	0			6	7	1	0
30		1	7*	5						12
31			21*	6*						15
Feb. 1	8*	14	4*	15			4	1	22	19
2	11		14	20			3			6
3	14		16	28			4			12

\* Below 0.

# METEOROLOGICAL OBSERVATIONS.

made at Eastman's Village, in Salisbury, by Edward Blodget, Esq. and at the Centre Meeting House in said Salisbury. The Meeting House may be 300 feet higher than the Village; the distance of the Village from the Meeting House is about 5 miles; the descent is towards the north-east; the descent of the land at the Meeting House is towards the south west.

TABLE 15.

1815. Mar.	Fast Village	Centre M. H. Village.	Fast Village.	Centre M. H.	East Vill.	Centre M. H.
5 38 56	10 m. bef. sunr. 1 o'clock, P. M.	10 m. bef. sunr. 1 o'clock, P. M.	Morning. Evening.	Morning. Evening.	Variation in 12 hours.	Variation in 12 hours.
6 38 51	39 43	—	8.	1 —	12	12...Cloudy, still; wind south-east.
7 28 31	25 32	3 —	—	1 —	3	4...Cloudy, windy; wind west, the night was rainy.
8 10 32	16 34	—	—	6 2 22	18...	7...Cloudy, still; wind north-west.
9 16 36	21 42	—	—	5 6 23	21...	18...Clear and still; wind north-west and south-west.
10 14 44	29 52	—	—	15 8 30	23...	21...Cloudy and still; wind south.
11 36 42	36 18	0 —	—	0 6 6	12...	23...Clear and still; P. M. cloudy, wind south.
12 23 47	32 —	—	—	9 — 21	12...	23...Rainy; P. M. fair, still, wind south by west.
13 32 37	31 42	1 —	—	5 5	11...	12...Clear and still; wind north-west; at night cloudy.
14 25 —	21 39	4 —	—	—	5	11...Snow; wind east; P. M. light wind north-west.
15 40 40	30 42	0 7	0 —	—	19	18...Clear and still; P. M. cloudy, wind east.
16 19 29	17 22	2 7	—	—	10	12...Cloudy, rainy; wind east; P. M. fair, wind N. W. windy.
17 7 30	9 25	—	5	2 —	23	5...Flying clouds, windy, wind north-west, the night still.
18 21 —	21 25	0 —	0 —	—	—	16...Clear and still; wind south-east; P. M. snow.
19 11 —	16 31	—	5	—	15...	16...Clear and still; wind north-west.
20 11 11	12 13	—	1	—	3	15...Clear and still; wind north-west.
21 8 11	8 11	0 0	0 0	0 0	19	15...Squally and cloudy; P. M. windy, scaly clouds, wind N. W.
					19	19...Wind, clear in P. M., the wind abates, wind north-west.

*Remarks on Tables 14 and 15.*

From the preceding tables it appears, that the difference of temperature is very considerable in situations which are at no great distance from each other : that the nights are colder in still, cold weather, in the vallies, than on elevated situations ; and when the sun has a fair bearing, the days are proportionably warmer in the vallies than on hills or mountains ; but in windy weather, and probably in moderate weather, elevated situations are the coldest. The variations of temperature are generally the greatest in vallies ; but this is not invariably the case ; they are, at times, greatest on the hills ; this appears to be the case in windy weather, particularly when cold and boisterous winds from the north and north-west alternate with southerly winds.



TABLE 16.

*State of the Weather at Augusta and Hallowell in Maine, Salisbury in New-Hampshire, and Albany in New-York, on the 9th of February, 1807, at sunrise.*

Augus Ther.	Hallo. Ther.	Salisb. Ther	Alb. Ther.	Weather.	Wind.
lat 44.36 34*	lat.44.16 36*	lat.43.20 2*	lat.42.39 20*	Fair.	N.W.

*State of the Weather at Salisbury in New-Hampshire, New-York City, and Albany in New-York, in 1808 and 1809.*

Salisbury.	Ther	New-York.	Ther	Albany.	Ther.	Weather.	Winds.
1808. Sep.	19. 82	lat.40.42	82	—	—	Fair.	N.W.
	20 56	Rain.	—	—	—	Cloudy	in Sal.
	21 40	—	—	—	—	Fair.	N.W.
	22 33	Frost.	—	—	—	Fair.	N.W.
1809. Jan.	13. 13*	—	13	—	—	Fair.	N.W.
	25 7	—	13	—	—	Fair.	N.W.
February	9 6*	The coldest	6	—	—	Fair.	North
	12 8*	day for the year	—	—	17*	Fair.	N.W.

*State of the Weather at Salisbury in New-Hampshire, and at Boston in Massachusetts, for four days in 1810.*

Salisbury.	Lowest	Highest.	Boston.	Lowest	Highest	Weather.	Winds
1810 Jan.	19. 23*	19*	lat.42.23	4*	1	Hazy.	N.W.
	20 15*	12*	—	5*	4	Fair.	N.W.
	21 16*	10*	—	6*	10	Fair.	N.W.
	22 11*	10	—	2*	22	Fair.	N.W.
1815 Jan.	31. 21*	6*	—	14*	16*	On this day	

the thermometer was observed at 8, A. M. and at 7, P.M.

*State of the Weather at Salisbury in New-Hampshire, and at Quebec in Lower Canada.*

Salisbury.	Ther.	Quebec.	Ther. at 8 o'clock, A.M.	Weather.	Winds.
1815 Jan.	18. 20	lat.46.48	17	Fair.	N.W.
	19 22	—	19	Misty.	East.
	20 23	—	28	Fair.	N.W.
	21 27	—	24	Fair.	N.W.
	22 12	—	14	Cloudy.	East
	23 11	—	15	Snow.	N.W.
	24 6.5	—	8	Fair.	N.W.
	25 10.5	—	12	ditto.	S. & N.W.
	26 7	—	8	ditto.	N.W.
	27 1.5	—	14	ditto.	S. W.
	28 8*	—	2	ditto.	West.
	29 0	—	10	ditto.	ditto.
	30 7*	—	7	ditto.	ditto.
	31 21*	—	14	ditto.	N.W.

\* Below 0.

† Ther. 10 minutes before sunrise

*Remarks on Table 16.*

By this table is shewn, that the greatest extremes of cold are experienced in the deepest vallies; (such as are at sufficient distance from the sea as not to be affected by it) as is evidenced by the great degree of cold experienced on the Kennebec and Hudson rivers.—Although it appears from the history of our climate, particularly since 1804, that great and long continued vicissitudes of temperature ultimately affect, in a greater or less degree, all or most part of this continent, of which we have any account: yet this table shews, that their operation is very unequal, as respects the latitude of different places; and that places, situated nearly in the same parallel of latitude, experience very different degrees of temperature.

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*The Remote Cause of Catarrh, Influenza, and Spotted Fever.*

“THE remote causes of catarrh,” or a cold, as it is called in the English language “is most commonly cold applied to the body; the application of cold can, in many cases, be distinctly observed; and I believe it would always be so, were men acquainted with, and attentive to, the circumstances which determine cold to act upon the surface of the body.”

—*Cullen.*

The influenza is said to be produced by a specific contagion, and to exist independent of the sensible qualities of the air; yet it will appear, on examining the history of this disease, that a long series of cold, variable, and unusually wet weather, has uniformly preceded the commencement of this disease: the continuance of such changes for a considerable time, as might be expected, appears to produce a debility of the capillary system, and thereby gives a predisposition to the disease: in this state of the system, a change of temperature, which, in a constitution not predisposed, would merely produce a common cold or catarrh, we are very generally informed has been the exciting cause of the disease. Great colds are sometimes called influenza, particularly when a great change of temperature is experienced; in such an event, great numbers of people are affected with the disease at nearly the same time. Dr. Rush, in his account of the influenza, appears to consider it contagious; or rather gives us the opinion of other writers to that amount; yet, in the conclusion of

the account, he makes the following remark: "I have hinted, in a former Essay, at the diminutives of certain diseases. There is a state of influenza which is less violent and more local than that which has been described. It generally prevails in the winter season. It seems to originate from a morbid matter generated in crowded and heated churches, and other assemblies of people. I have seen a cold, or influenza, frequently universal in Philadelphia, which I have distinctly traced to this source. It would seem as if the same species of diseases resembled pictures; and that, while some of them partook of a deep and vivid nature of mosaic work, others appeared like the feeble and transient impressions of water colours."

There are so many facts opposed to the idea of the contagious nature of influenza, (viz. the circumstance of two vessels coming from different countries where the disease did not prevail, and the crews of both being attacked by the disease at sea at the same time; and likewise families who were remotely situated, and having no communication with any person for a considerable time, having the disease at the same time with other people; its sudden appearance in remote places, &c.) that it now appears to be pretty generally renounced. Dr. Ricketson makes the following remark:—"Notwithstanding the general opinion, long entertained, and handed down from one physician to another, of the contagious nature of [influenza] it is hoped there are now sufficient observations and incontestable facts to question and even to disprove that idea."—The similarity of



the influenza to spotted fever is so striking, that had it not been for the accidental appearance of spots, in some cases, the probability is, that the present epidemic would still have continued to be called by that name.

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*The Identity of Influenza with Spotted Fever.*

It is true, that the characteristic symptoms of influenza, (or contagious catarrh, as it has been called) has not invariably attended the present epidemic, viz. a defluxion of rheum from the nose, throat, lungs, &c. yet a discharge from these parts has occasionally occurred, even in very severe cases of this disease, particularly when the thoracic, viscera, throat, &c. had been the seat of the disease; neither is a simple cold always attended with a discharge from the nose, throat, &c. "Suppose a person fainting from the heat of a crowded room, a window is thrown open, with the door, and many are exposed to a current of cold air; yet how various are the disorders produced! Should any other part, from previous circumstances, have been rendered more sensible to its influence, we shall in consequence have either a sore throat, a diarrhoea, a stiff neck, tooth-ache, or rheumatism, in place of catarrh.

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## 140 *Symptoms of Influenza and Spotted Fever compared.*

### *The Symptoms of Influenza and Spotted Fever compared.*

The following symptoms are common to both diseases.

1. A person, who labors under a predisposition to influenza, feels exceedingly sensible to the least change of temperature.

2. The face in some instances is swollen and florid, and probably it is sometimes of a leaden cast; the hands are sometimes purple; the extremities cold; lassitude, &c.

3. There are sharp darting pains felt, at times, in the head.

1. When the exciting cause has been applied, and produced the disease—The patient experiences a chill more or less severe; pain in the head frequently very severe, or in the breast, side, ear, jaws, or even a tooth, in the frontal sinus, or over one eye, &c! The pulse full and hard, but sometimes soft; the temporal arteries throb violently; the head often very hot, while the extremities are cold. After the cold fit, the heat at the surface is very considerable; the fever has evident remissions, and seldom continues above three or four days; but the cough, and other troublesome symptoms,

1. A person laboring under a predisposition to spotted fever, feels extremely sensible to the least change of temperature. A person in this situation once observed to me, that if he dipped but the tip of his finger in cold water, he immediately experienced a severe chill, which penetrated his whole body.

2. The face is often rather swollen and purplish; the extremities colder than natural, and also moderately swollen and purplish; the pupils of the eyes are sometimes dilated, pulse full and soft, and when examined at the wrist, are frequently stronger in one radial artery than in the other.—There is a great torpidity of the system generally, and it requires all the resolution that the person is master of to perform his customary business.

3. Sharp darting pains are felt at times in the head; and it sometimes happens, that when from coughing, straining, or otherwise producing a fulness of the blood vessels of the brain, whereby the membranes of the brain, and brain, become compressed, a soreness is felt in the membranes of the brain, generally on one side of the head only.

1. When the disease has made its attack—The patient often complains of extreme and long continued chills, pain, (sometimes very extreme) in the head, over one eye, breast, side, extremities, and even in a tooth; pulse sometimes full, and slow, but frequently small, quick, and intermitting; but never hard; the temporal arteries beat violently; the head is often extremely hot, while the extremities and most of the body feel cold; after the cold fit, the heat of the body at the surface is often very considerable, sometimes as great as in any fever with which I am acquainted; the fever

sometimes continue three or four weeks.

2. Profuse sweats sometimes appear over the whole body, without affording any relief.

3. Erysipelatos and military eruptions sometimes attend the influenza.

4. Dr. Rush observed, in his treatise on this disease, in the year 1789, that in most cases which terminated fatally, the patient died of pneumonia notha. Dr. Rush likewise observes, that those who suffered by the influenza in 1789, were affected in the breast; but in the year 1790, they were very generally affected by this disease in the head.

5. In influenza, deep seated rheumatic pains, which appear to be in the small vessels, which are in immediate contact with the periosteum, are frequently complained of by the patient.

6. In some instances, the whole force of the disease falls on the bowels, producing diarrhoea, &c.; but in general the bowels are regular, or costive.

7. In 1790, Dr. Rush observes that in a few cases the fever (viz. influenza) terminated in a tedious and dangerous typhus.

has evident remissions: it seldom continues violent more than three or four days, though effusion in the lungs and bronchial cells often happen as late as the fifth and seventh day, and the cough, rheumatic pains, and other troublesome symptoms, sometimes continue for several months.

2. Profuse sweats have in a few instances attended the spotted fever, particularly in the month of July, 1814.

3. Erysipelatos and military eruptions occasionally happen in spotted fever, and likewise petechiæ and vibices.

4. In 1812, spotted fever generally affected the lungs; and in 1813, the head was the part which suffered most frequently.

5. Deep seated and excruciating pains in the limbs, swelling of the joints, and effusion of blood, and serum in immediate contact with the periosteum.

6. In some instances this disease affects the bowels, producing diarrhoea, colic, dysentery, &c. but in general the bowels are regular, or costive.

7. There are comparatively but few cases in which the spotted fever terminates in a real typhus.

### *Similarity of Symptoms in Influenza and Spotted Fever.*

It appears by the preceding statement, that influenza and spotted fever correspond in all the most important symptoms; and there are still other symptoms which are common to both diseases, viz.

palsy, dropfy, mania, abscesses, &c. From the preceding history of those complaints, their prevailing in the same year, a great mortality in some instances attending the influenza, and both disorders being at times very mild, the identity of the two diseases appears obvious; and from the foregoing history of our climate and diseases, and likewise for other reasons, I am induced to consider catarrh, or a common cold, a disease of the same nature, and depending on the same causes, as the abovementioned diseases, differing only in degree. Although I can discern no utility in considering and treating the spotted fever and influenza as distinct diseases; yet there are an infinite variety of gradations between a simple cold which merely produces slight inflammation, and the most deadly state of spotted fever which destroys all action, and consequently all vitality of the part. Though these very opposite states of the system appear to be produced by the same cause, differing only in degree as respects the intensity of those changes, and the frequency of their occurrence; as the same changes of temperature, when applied in a suitable degree, are invigorating and healthful;\* and as heat and cold, in their appropriate degrees,

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\* Cold is a relative term. A degree of heat or cold is agreeable, or disagreeable, according to the previous temperature of the body, or part, to which it is applied: as the same water may be made to feel hot or cold: if you first immerse your hands in snow, and then in the coldest water, it will feel warm; then if you immerse them in warm water, or warm them by the fire, it will feel cold: neither is it the degree of heat, or cold, but a sudden transition from one to the other, which is so injurious to health. Dr. Rush observes, that "a continuation of the same kind of weather, whether it be cold or hot, wet or dry, is uniformly healthy." There are but few persons who have not been sensible of the acute pain which we experience in consequence of a sudden transition from one extreme to the other; as for instance, when our fingers are benumbed with cold, the sudden warming of them produces the most poignant pain.



are agreeable ; yet if these degrees are but moderately increased, and the transition from one degree of temperature to the other is sudden, they become in a slight degree painful : if still further increased, they produce intense pain : and if further aggravated, they cause death. In like manner, if the changes of temperature are increased beyond a certain relative degree, which will be sometimes more, and at other times less, they produce slight inflammation ; but if these changes are increased to an extreme degree, cessation of all action, and death, is the consequence. And from the most moderate or slight shade of inflammation to the most violent, there are an infinite variety of grades : so the reverse is equally true, from the highest degree of inflammation down to a complete cessation of action.

From this view of the subject, there appears to be three states of the system, though produced by the different application of the same cause, viz. the different degrees of temperature, and the more or less sudden transition from one degree of temperature to another, as likewise the length of time the system has suffered by these changes ; yet the first and second states require a considerable difference in the mode of treatment ; and the second and last are opposite states of the system, and consequently in most respects require opposite treatment : from which circumstance, there is a propriety of considering those different states of the system separately, and assigning to each a distinguishing term or appellation. The generic term catarrh, though of very ancient date, does not appear to be sufficiently sig-

nificant, or descriptive of the nature of this malady : yet I have thought that by the addition of adjectives expressing the different states of this affection, it might answer my purpose in this Inquiry perhaps better than any name which I might adopt.

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*Febris Catarrhalis, or Catarrhal Fever.*

“ It is not till the next day, or perhaps the second or third day, that the person, who has caught cold, begins to complain, and recollects his exposure to cold, either partial, as is most common, or general. This frequent, but curious fact, is similar to what happens in the operations of the causes of other febrile diseases. From the commencement of their action on the body, some time must elapse before the system in general can be affected by them, so as to produce the disease corresponding to the nature of the cause. The symptomatic fever, in consequence of wounds, amputations, and other surgical operations on the body, is seldom considerable until the third day after the operation is performed. This cause will go on slowly, acting imperceptibly until the system in general is affected, exciting more or less of fever, or that disagreeable sensation over the body, which generally precedes the accession of fevers. The least cold produces uneasiness even in warm weather. The membranes of the nose become first affected, and there is a dryness, and afterward defluxion of that part ; often the amygdalæ, and other glands about the throat, mark the first stage of this disorder. There is frequently

considerable fever, especially towards night. In a few days the trachea, or wind-pipe, becomes affected, when the throat appears husky; after which, the natural secretion is increased and altered, and there is a considerable discharge of thin, sharp rheum, from the glands of the throat, and fauces. The secretion from the upper parts decreases, and it is now said to fall upon the breast, which feels tight. At first there is only a tickling, uneasy cough; expectoration comes on, which is thin at first, gradually becomes thicker, and diminishes in quantity until the patient recovers.

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*Febris Catarrhalis Synocha Major, or the Greater Inflammatory Fever from Cold.*

*Symptoms.* The countenance florid, the face occasionally swollen: the fever commences with more or less of a shivering fit; the pulse is full, strong, tense and hard: the heat of the body is considerably increased after the first shivering fit. The minute blood vessels in the extremities, under the nails, and in that part of the lips which is not covered with the cutis vera, are of a bright scarlet red; if an impression be made on these parts by the point of the finger, the flesh feels firm, the motion of the blood in the capillaries is seen to move very quick, and is of a bright lively red; the blood, when drawn, is uncommonly florid, has a firm coat which huffs up and stands prominent in the centre of the dish; if there is any local inflammation attending this fever, all the arteries in

the neighborhood of this part throb with a firm and strong beat ; the coats of the arteries feel hard and tense, as though considerable resistance was made to the flow of the blood in them. The minute vessels, likewise, feel tense and firm, as though considerable force was required to move forward their contents ; the eyes are rather brighter than in health, and all the senses are more acute ; the tongue is rather dry and furred, and is of a red color ; the throat and tonsils are sometimes swollen and red.

The most usual forms of this disease are pleurisy, pneumonia, phrenitis, and influenza in general belongs to this grade, synanche, tracheitis, tonsyllaris, &c. I think that writers are in general agreed in considering most of the above diseases to be commonly produced by cold. Dr. Cullen observes, " the remote cause of pneumonic inflammation is commonly cold applied to the body, obstructing perspiration, and determining to the lungs, while at the same time the lungs themselves are exposed to the action of cold."—" Winter and spring, especially the latter, are the seasons in which pneumonia appears ; it is generally the more frequent, the colder, the moister, and more changeable the weather is. Huxham says, he has seen the same epidemic in low, warm situations, near the sea, prove only a catarrhal fever, and in more exposed, cold situations, a true pneumonia."—" In the observations of the army physician, however, we find pneumonia proceeding from the extremes of weather, whether warm or cold. Dr. Donald Monro observes, that the soldiers were attacked with



pleurifies at all seasons of the year, when they were exposed to the intemperance of the air, whether it was very cold, very warm, very dry, or very moist. Sir John Pringle makes similar observations. The exciting causes of pneumonia, the sudden or partial application of cold, is the chief."—See A. Phillips Wilson's Treatise on Febrile Diseases.

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*Febris Catarrhalis Maxima, or Fever from Cold, called Spotted Fever, &c.*

IN consequence of long continued and great changes of temperature, whereby the minute vessels, both on the internal and external surface, are in an extreme state of debility, the heart, and large vessels likewise, partake of this debility, and the pulse is soft, quick, and intermittent; but, in some instances, it is full, apparently strong and slow, or frequent, but never hard, and at times intermits, or even stops at the wrist. The pain at times will appear in almost every part of the body, but usually it is most acute in the head, or chest. The fever commences with shivering fits, which are often very severe; a low and comatose delirium, with a disposition to sleep; but in a few cases the delirium is raving and unmanageable; but in a large proportion of cases the patient appears perfectly sane; in many cases there is more or less of a palsy of one side; the pupil of one eye is dilated more than the other, and the sight often impaired; the mouth in some cases is drawn to one side, &c.; a slight degree of numbness, in one or both arms, &c.; the

eyes bright, but inexpressive ;\* the face, lips, and extremities, moderately swollen, cold, and purple ; in many cases, the circulation of the blood in the capillary vessels exceeding flow ; † hemorrhage from the nose, throat and lungs, and occasionally from the bowels in the form of dysentery, and from the urinary passages, &c. ; the blood thus discharged is usually of a dark color ; rheumatic pain, and swelling of the joints and limbs ; effusion of blood and lymph, which in general lies deep on the periosteum, and often extends from the knee or ankle joint to the hip, surrounding the bone and periosteum, and occupying the whole limb ; internal effusions in the lungs and liver, in the brain and its membranes, &c. producing palsy, suffocation, &c. ; effusion on the surface of the large bones of the head and trunk. The pain in many cases is extreme, in others it is moderate ; in some cases the patient lies stupid, and appears in a great degree to be insensible to pain ; strangury is a common occurrence ; the tongue is most usually moist, except when the pyrexia is considerable, it is dry at the tip ; in most cases it is covered with a white, thick coat ; but when bile is

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\* In some forms of this disease, particularly in those cases which are attended with a superficial sloughing of the mouth, throat, &c. the eyes are dull, and the countenance remarkably sunk. In the last stage of this complaint, the eyes are in general dull, and suffused with blood.

† There is a want of that tension and resistance in the minute vessels which characterize synocha or active inflammation. There is a remarkable loss of tone, or relaxation of the fibre, which is perceptible both by the pulse, and feel at the surface.—The countenance and extremities have in most cases a dusky, lifeless aspect. The strength of the patient is generally greatly reduced ; though in a few instances, he has sufficient to sit up, and even to walk, but a few minutes before death.

considerable at the stomach and bowels, it will be of a brown or yellowish hue; the skin is in such cases yellowish; the breathing is often laborious, and attended with frequent sighing: there is in many cases cough, and pain in the side, as in pleurisy, attended with a bloody expectoration; the heat of the head is often great, while the extremities are colder than natural; the temporal and carotid arteries in such cases pulsate violently; the throat in most cases is in a slight degree sore; the tongue and throat in some instances swell to an alarming degree, even so as to produce suffocation; the lips, mouth, nose, and fauces, are, in some cases, affected with a superficial sloughing and ulceration, which often extends to the lungs and stomach;\* erysipelas and miliary eruptions, likewise effusions of coagulable lymph, immediately under the cuticle or scarf skin, † and in some instances petechiæ and vibices, appear.

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*The Remote Cause of the Spotted Fever.*

DR. Cullen considers cold as one of the principal remote causes of fever. See the account, First Lines of the Practice of Physic, Vol. I. page 73. Dr. Rush makes the following remark: "Cold—This is universally acknowledged to be a predisposing cause of fever. That it debilitates, I infer, 1. From the languor which is observed in the inhab-

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\* † A description of these eruptions is given in page 76; as they occurred in the spring of 1811.

itants of cold countries, and from the weakness which is felt in labor or exercise in cold weather.

2. From the effects of experiments, which prove that cold air and cold water lessen the force and frequency of the pulse." *Medical Inquiries*, Vol. III. page 6.

6. Other causes, doubtless, have a share in giving a predisposition to this disease ; among the principal have been reckoned food of bad quality, thin clothing, and scanty diet ; doubtless these may be considered as concurring causes. Intemperance in eating and drinking,\* or whatever causes debilitate or produce unequal excitement, may be considered at least as accessory ; but from the history of this disease, and its concomitants, it appears that the vicissitudes of temperature are the great and predominating cause.

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\* Persons, who are diseased by the intemperate use of spiritous liquors, have the same capillary debility, purple hands, face, &c. and bloated countenance, which indicate a predisposition to spotted fever.



## PART SECOND.



AN

# INQUIRY

INTO

## THE NATURE

OF THE

# PREVAILING EPIDEMIC.



THE history of a singular and very mortal disease, which made its appearance in Medfield, Massachusetts, in the month of March, 1806, communicated by Drs. L. Danielson and E. Mann, and published in the Medical and Agricultural Register. —The similarity of symptoms in nine cases which proved fatal, all between the 8th and 31st of March, have been so great as to render the particular detail of each unnecessary ; we shall therefore only give a concise history of the mode of attack, and progress of the symptoms generally.

Without any apparent predisposition, the patient is suddenly taken with violent pain in the head and stomach, succeeded by cold chills, and followed with nausea and puking ; matter discharged from the stomach of no unusual or morbid appearance ; respiration short and laborious ; tongue a little white towards the root, and moist ; velocity of the blood increased, with a very sensible diminution of momentum in the radial, while in the carotid arteries it was much augmented ; the eyes had a wild, vacant stare, without much, if any, appearance of inflammation ; the heat of the skin soon became much

increased, yet the skin is not remarkably dry : these symptoms are accompanied by a peculiar fearfulness, as if in danger of falling from the bed, or the nurse's arms, and continuing from six to nine hours, when coma (suppression of sense and voluntary motion) commences, with increasing debility ; extremities become cold ; livid spots resembling petechiæ, purple spots which appear in the last stages of certain fevers, appear under the skin, on the face, neck, and extremities ; pulse small, irregular, and unequal ; spasms occur at intervals, which increase in violence and frequency, in proportion as the force of the circulation decreases : at this time, the eyes appear glassy, and the size of the pulse varies suddenly, from almost wholly obliterating the iris, down to the size of a millet seed, and then again as suddenly dilating.

These symptoms seem to mark the second period of the disease, and continue from three to five hours. —The third and last stage is distinguished by a total loss of pulsation at the wrists ; livid appearances become more general ; spasms more violent ; coma more profound ; death !

Examination by dissection was had, on five bodies of patients dying of the above described malady.

The first examination was made on a boy, ten years old, seven hours after death, whose case was strongly marked, terminating in about twenty-two hours. On removing the cranium, and dividing the dura mater, there was discharged, by estimation, half an ounce of a serous fluid. The dura and pia mater, in several places, adhered together, and both to the substance of the brain. The veins of the brain were uncommonly turgid, with a fluid similar to that which was discharged from between its membranes ; and the substance of the brain itself remarkably soft, offering scarcely any resistance to the finger, when thrust into it : the cerebellum also was found in the same state. The stomach contained

about six ounces of a dark fluid, resembling coffee grounds ; and its villous coat was nearly in a state of dissolution. The lungs were rather darker than usual ; otherwise, all the viscera were in a sound state —The second examination was made twelve hours after death, on the body of a girl of five years old, of the same family, and sick at the same time, and whose case was also strongly marked. Between the dura and pia mater was effused a fluid resembling pus, both on the cerebrum and cerebellum, the veins of the brain turgid with blood, and the hemispheres adhered together with considerable strength ; these were the only morbid appearances within the cranium. The appearance of the stomach differed in nothing from that of the preceding case, only that the villous coat was not so tender, the abdominal and thoracic viscera were apparently healthy.

In the other cases that were examined, nothing peculiarly morbid was discovered in any part of the system, excepting the veins and sinuses of the brain were found remarkably turgid with a very dark colored blood.—See the account in the Medical Repository, Vol. III. Hex. 3. page 41.

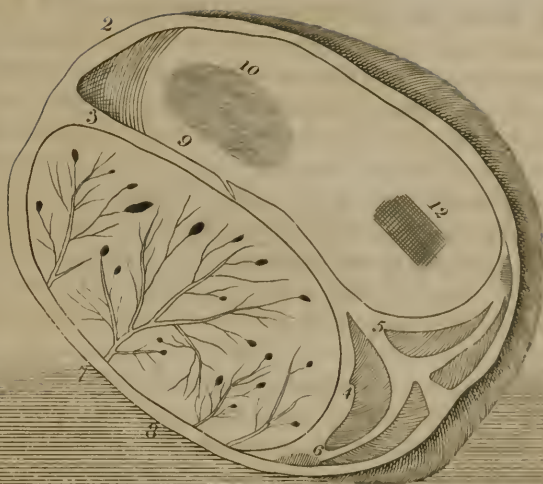
May 2, 1810, visited Mrs. —, aged about 35 years. She complained of pain in her limbs, a numbness in her left arm, lassitude, and a throbbing sensation in her head ; in attempting to dress herself, she fell, and remained senseless about two hours ; her skin cold, and a cadaverous countenance, very low pulse, and difficult respiration ; soon after the hot stage commenced (which was about two and an half hours from the commencement of her disorder) her senses were partially restored, and many radiated spots appeared on the skin ; frequent puking of dark colored matter mixed with blood ; her pulse low and intermitting ; delirium ; the spots on her skin increased in size, and dark appearances resembling a bruise ; the symptoms did not alter (except in violence) until the 4th of May, when she

died. Permission being obtained to examine the body after death, the following were the appearances on dissection.

# PLATE I.

Fig. 1, shews the hairy scalp, separated from the bone, and turned back over the occiput and bregmatis.—Fig. 2, represents the lower section of the skull, separated by the saw; the upper part being removed, the brain, covered with its membranes, is brought into view.—Fig. 3, longitudinal sinus.—Fig. 6, great lateral sinus.—Fig. 5, fourth sinus.—Fig. 4, tentorium.—Fig. 7 and 8, shew the appearance of ruptures in the extreme branches of the arteries or veins, or rather in the junction of the arteries with the veins.—Fig. 9, represents the brain divested of its membranes.—Fig. 10, shews an extravasation of lymph on the surface of the brain.—Fig. 12, a portion of the brain that was disorganized, and was torn away, adhering to the membrane, leaving the impresson of parallel threads, with other parallel threads crossing the first at right angles, as in the figure. The membrane had adhered to the brain, or rather to the membrane of the brain, and in separating the two membranes from each other, the more firm or fibrous part of the lower membrane remained entire; while the cellular part was removed, adhering to the upper membrane, or pia mater. There was a looseness of texture, or disorganization, through the whole substance of the brain; yet this disorganization did not appear to be in consequence of any putrefactive process, but was very similar to what happens in frozen flesh when suddenly thawed. The vessels of the brain appeared to have suffered in a similar manner with those of the membranes; there was a general diffusion of bloody serum through the whole substance of the brain; the veins were distended much above their usual size; the ventricles contained no more lymph than their usual quantity: the longitudinal sinus was but moderately distended with blood; the lateral





*Fig 1.*

CHAPTER I  
THE DISCOVERY OF AMERICA  
The first discovery of America was made by Christopher Columbus in 1492. He sailed from Spain in search of a westward route to the Indies. On October 12, 1492, he landed on the island of San Salvador in the West Indies. This event marked the beginning of European exploration and colonization of the Americas.

CHAPTER II  
THE EARLY YEARS OF THE COLONIES  
The early years of the colonies were marked by struggle and hardship. The settlers faced numerous challenges, including lack of food, disease, and conflict with Native Americans. Despite these difficulties, the colonies grew and developed, laying the foundation for the future United States.

CHAPTER III  
THE STRUGGLE FOR INDEPENDENCE  
The struggle for independence began in the 1760s, as the colonies fought against British rule. The American Revolution culminated in the signing of the Declaration of Independence in 1776. The war ended in 1781 with the British surrender at Yorktown.

CHAPTER IV  
THE CONSTITUTION AND THE EARLY YEARS OF THE UNION  
The Constitution was drafted in 1787 and ratified in 1788. It established the framework for the federal government and the relationship between the states and the federal government. The early years of the Union were marked by political and economic challenges, but the country grew and prospered.

CHAPTER V  
THE WESTERN EXPANSION  
The Western Expansion was a period of rapid growth and settlement in the western United States. It was driven by the desire for land, resources, and new markets. The expansion led to the discovery of gold and silver, and the establishment of new states.

CHAPTER VI  
THE CIVIL WAR  
The Civil War was fought between 1861 and 1865. It was a conflict over the issue of slavery and the rights of states. The Union emerged victorious, and slavery was abolished. The war led to the Reconstruction era and the establishment of the 13th and 14th Amendments to the Constitution.

CHAPTER VII  
THE RECONSTRUCTION ERA  
The Reconstruction Era was a period of rebuilding and reform in the South. It was marked by the passage of the Reconstruction Acts and the establishment of the Freedmen's Bureau. The era ended in 1877 with the Compromise of 1877.

CHAPTER VIII  
THE Gilded Age  
The Gilded Age was a period of rapid industrialization and economic growth. It was marked by the rise of big business and the accumulation of vast wealth by a small group of people. The era ended in 1900 with the beginning of the Progressive Era.

CHAPTER IX  
THE PROGRESSIVE ERA  
The Progressive Era was a period of reform and social change. It was marked by the passage of the Progressive Era reforms, including the Pure Food and Drug Act and the Antitrust Act. The era ended in 1914 with the beginning of World War I.

CHAPTER X  
WORLD WAR I  
World War I was fought between 1914 and 1918. It was a global conflict that resulted in the deaths of millions of people. The war led to the establishment of the League of Nations and the United States emerged as a world power.

CHAPTER XI  
THE INTERWAR PERIOD  
The Interwar Period was a period of relative peace and economic growth. It was marked by the passage of the New Deal and the establishment of the Federal Reserve. The era ended in 1939 with the beginning of World War II.

CHAPTER XII  
WORLD WAR II  
World War II was fought between 1939 and 1945. It was a global conflict that resulted in the deaths of millions of people. The war led to the establishment of the United Nations and the United States emerged as a world power.

CHAPTER XIII  
THE COLD WAR  
The Cold War was a period of tension and conflict between the United States and the Soviet Union. It was marked by the arms race and the Korean War. The era ended in 1991 with the collapse of the Soviet Union.

CHAPTER XIV  
THE POST-COLD WAR ERA  
The Post-Cold War Era is a period of relative peace and economic growth. It is marked by the passage of the North Atlantic Treaty Organization (NATO) and the establishment of the World Trade Organization. The era is ongoing.

sinuses were considerably so, which probably was occasioned in part by the position of her head.— Might not the sudden and frequent vibrations of heat and cold, in the years 1807 and 1808, which appeared to produce the influenza, (or great catarrh) together with wet seasons, and extreme and sudden changes of weather, which happened in 1809, and the beginning of 1810, have produced the spotted fever?

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*Extracts from Stuart's Dissection.*

(See the account in the Med. Repository, Vol. III. Hex. 3. p. 23.)

[THE following case happened in Albany : it appears to have occurred in 1811.]—A native of New-Haven, which place he left six weeks since, aged 22 years, of a robust, muscular habit, complained, at 11 o'clock, A. M. the 28th of March, of an oppression (or load) at his stomach ; at 12 o'clock, however, having a good appetite, he ate a hearty dinner, and continued apparently as well as usual, the slight oppression above mentioned excepted, until 6 o'clock, P. M. when he had a severe chill, which was succeeded by sickness at the stomach, and great oppression at the scrobiculus cordis ; at 10 o'clock he puked his dinner, and was shortly after seized with violent pain in the head, back, and extremities. These symptoms continued much the same until 6 o'clock, A. M. the 29th ; at which time his extremities were cold, and several claret colored spots were discovered on them ; at 9 his extremities were cold, and the discoloration, above mentioned, extended almost to the trunk ; had no pulse in either the radial, temporal, or facial arteries ; his eyes suffused, countenance heavy, lips livid, tongue dry and of a brown color, pain in the head, back, and extremities, sickness at stomach,

and oppression much as had been during the night ; within the last hour, a troublesome diarrhoea, insatiable thirst, great anxiety and distress, (which he was unable to describe) had come on, and rendered his situation really distressing and hopeless ; at 10, all the symptoms were increasing rapidly, pulse in the carotids 38 in a minute, and feeble ; the faculties of the mind appeared to be unimpaired ; the claret colored spots had commenced on his ears and face ; at 3, P. M. he had lost his reason, eye-sight, and power of deglutition ; respiration hurried and difficult ; since 1 o'clock he had been very restless, pulse in the carotid 160 in a minute, and feeble ; extremities cold and stiff ; heat of the trunk natural, discoloration becoming general, eyes much suffused, and eye-lids closed ; at a quarter before 6 o'clock he expired. At 7 o'clock the extremities, which at 3 were stiff and cold, were flexible, and to the touch appeared to be several degrees above the natural heat of the body in health.

Permission being obtained, I examined the body at 9 o'clock on the 30th. The claret color on the surface appeared to have been produced by a slight effusion of blood into the cellular substance. The omentum was of a pink color, the blood vessels of the mesentery and the vena portarum were distended with blood, the spleen was about four times its usual size : on cutting into it, a great quantity of grumous blood of a foetid smell oozed out of it, the stomach was empty, the gall bladder full of yellow bile. Nothing farther was discovered in the abdomen differing from a healthy state ; the lungs were of a healthy appearance ; the heart, and large vessels connected with it, particularly the aorta, were distended with blood ; the coronary vessels were as minutely injected as I have ever seen them in the best preparations. On removing the skull-cap, the dura mater adhered very firmly to it ; the blood vessels of the dura mater and brain were distended with blood ; on making an incision into any part



of the brain, the cut surface was instantly covered with blood, which oozed from its vessels ; the right lateral ventricle contained about a table spoonful of serum.

This was, unquestionably, a genuine case of what has been termed in Connecticut "the Spotted Fever," where, I believe, it has generally been considered as a disease of debility, and treated as such. But how debility should take place so suddenly, and to so great a degree, and yet the patient should recover almost as suddenly, (which has been the case in a few instances) was a mystery, which neither myself, nor any medical gentleman with whom I had conversed on the subject, were able to explain. With a view, if possible, to throw some light on the nature of this disease, I was induced to undertake the dissection before stated ; and from what was discovered, I think myself warranted in making the following conclusions, viz. Let the cause be what it may, I think the effect is to produce a torpor of the glands, lymphatic and sanguiferous vessels, situated in the extremities and surface of the body, which, in violent cases, is shortly followed by a total loss of action in these vessels. The effect of this is to force all the blood from these parts into the large vessels situated in the abdomen, and thorax, and brain, producing in them a state, termed by the French writers, engorgement, and constituting what, I think, may be properly called a disease of oppression, not of debility. This opinion is supported by the early loss of the circulation and discoloration in the extremities, and by the slow and feeble action of the heart, which I took notice of when I first saw the patient at 10 o'clock ; the heart was then oppressed, and almost overpowered by the unusual quantity of blood constantly crowding upon it.

*A Description and Dissection.*

MRS ——— was seized with the usual symptoms of spotted fever, April 27, 1812, viz. severe, cold shivers, pain in the breast and head, difficulty of breathing, great anxiety at the pit of the stomach, pulse full and soft : on the third day, the difficulty of breathing was greatly increased, attended with rattling and coughing ; great exertions were made to raise the mucus from the lungs, but with little effect ; the matter expectorated was viscid, and adhered to the throat and mouth, so that it was extremely difficult to disengage it from these parts ; the pulse become irregular and intermitting ; the face and lips swollen, and of a purplish cast ; the eyes fixed and staring : on the fourth day from the attack, she died by suffocation. Leave being obtained to examine the body after death, the following were the appearances on dissection.

## PLATE II.

*A View of the Internal Face of the Sternum, covered with the cellular Membrane.*

Fig. 1, represents the sternum, the pleura being removed.

Fig. 2, the cartilages of the ribs.

Fig. 3, represents vesicles of air in the cellular membrane, adhering to the sternum.

Fig. 4, shews extravasations of lymph in the cellular membrane, of a yellowish appearance.

In the pleura, lining the posterior and lateral part of the thorax, where the lungs did not adhere.

The arteries and veins appeared to have been ruptured in their most minute branches, or immediately at their junction with each other, and produced extravasations of blood, of a very dark color ; as is seen in the representations of the vessels of the heart, lungs, &c.



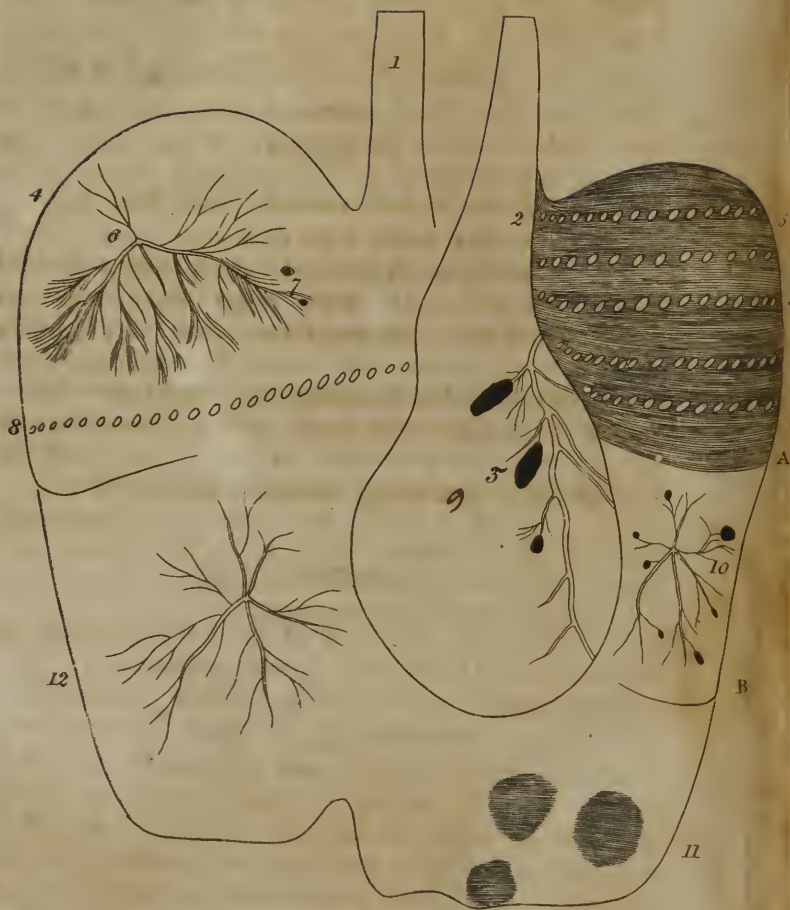




PLATE III.

*A Front View of the Lungs and Pericardium.*

Fig. 1. Trachea, or wind-pipe.

Fig. 2. Aorta.

Fig. 5. The pericardium.

Fig. 9. A view of the internal surface of the pericardium, the blood vessels of which have suffered in a similar manner with those of the lungs and pleura; but the spots of extravasated blood were much larger in the pericardium, than in the pleura or lungs, as seen in the figure.

The pericardium contained nearly half a pint of yellowish serum. The lower edge of the lungs was of a bright scarlet red, and swam in water; while a portion of the organ, cut about two inches above, was remarkably heavy, and sunk in the same liquid. The air cells were completely filled with a yellowish lymph, which was as fluid as water, except at the lower edge of the lungs, which contained air. This viscus was of a dark red color, and adhered, throughout its whole surface, to the pleura and diaphragm, saving the posterior surface, where there was a large collection of lymph.

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## PLATE IV.

*A Front View of the Heart.*

The heart, the auricles and vessels of which are distended to an enormous size, with blood almost black, and spots, as in the aforementioned representations; and an extravasation of lymph and blood, of a yellowish color, at its apex.

## PLATE V.

*A View of the Convex Side of the Liver.*

The liver appeared of a dark red color, with large irregular spots dispersed throughout its whole surface. These spots were nearly of the natural color of the liver, and appeared sounder than any other part of it.

The diaphragm also appeared of a dark red color, and adhered to the lungs throughout its whole extent.

The spleen had a similar appearance with that of the liver.

*A Representation of the Lungs of Mr. Stevens, who died of the prevailing fever, April 17, 1813, aged about 17 years, of a robust, athletic habit: He died by suffocation on the eighth day of the disease.*

Fig. 4. The right lobe of the lungs.\*

Fig. 5. The left lobe of the lungs.†

Fig. 6. A blood vessel of the lungs, its branches not well defined, but very much spread, and jagged by a previous extravasation of blood in its branches.

Fig. 7. The vestiges of spots, which are mostly absorbed.

\* See the plate of the lungs, facing page 165.

† The blood vessels of the lungs are drawn proportionally larger than natural, the better to shew their morbid state.

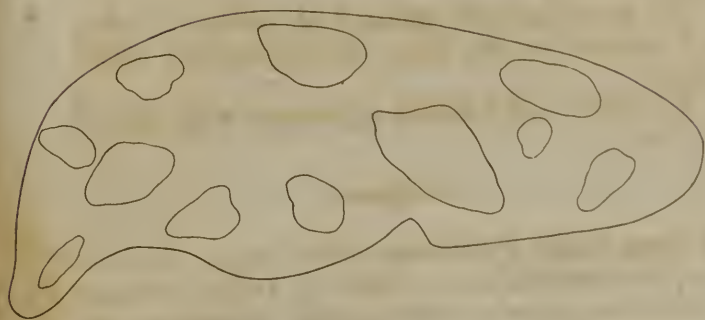
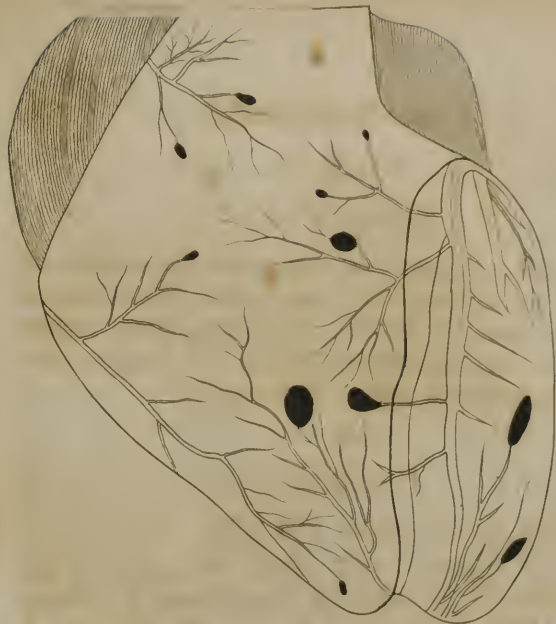






Fig. 8. Vesicles of air in the small plica of the lungs.

Fig. 9. A minute effusion of blood, of a dark crimson color, occupied all that portion of both lobes of the lungs, which is comprehended above the great fissure ; these portions were of a brick color, and so completely distended with blood, as to prevent their being, to any considerable degree, inflated with air ; their gravity was nearly equal to that of water ; on cutting into any part of them, they appeared, as it were, one mass of blood, mixed with air.

Fig. 10. A blood vessel, with spots from extravasated blood, the sides of these vessels, and Fig. 12, are distinct, and well defined.

Fig. 11. Large extravasations of blood of a black color.

Fig. 12. The lower portion of the right lobe of the lungs, which were tolerably sound.

A B. That portion of the left lobe of the lungs, likewise, which is comprehended between A and B, was nearly natural ; these two last mentioned portions were the only parts of this viscus which were capable of being inflated in the last hours of the patient.

There appeared, on examining the brain, the vestiges of an extravasation in the blood vessels of the dura and pia mater, similar to what is represented in the drawing of the blood vessel, Fig. 6 and 7 ; there were, likewise, several small depositions of lymph on the surface of the brain. From the above appearances, and the symptoms which attended the first stage of the disease in this case, it seems highly probable, that in the first attack there was a considerable extravasation of blood from the extreme branches of the vessels of the membranes of the brain, which now appeared to have been nearly absorbed. In the first stage he was comatose ; and, as I was informed, emetics had little or no operation,

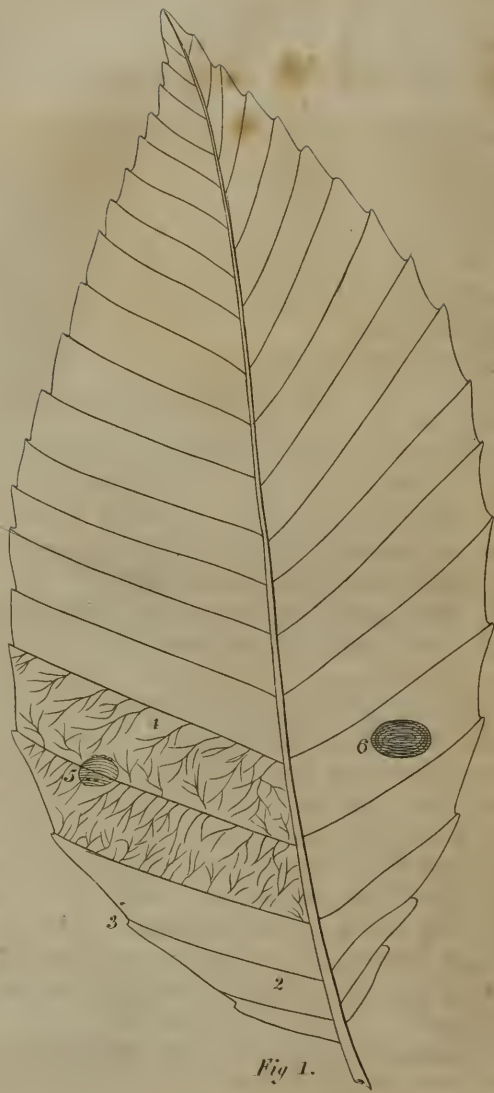
though given in large doses. On the fifth day, as I understood by the attending physician, his breathing became extremely laborious. It required his utmost effort to dilate the thorax, so as to admit air sufficient to support life ; it was found, at this period, that cathartics gave him great relief ; which was probably in consequence of diminishing the bulk and tension of the abdomen, and thereby giving the diaphragm more space.

It appeared, from the symptoms of the disease, and the appearances on dissection, that the patient might have survived the affection of the brain ; but this affection of the brain was probably the cause of the insensibility of the stomach to the operation of emetics, in the commencement of the disease ; and thereby the most efficacious medicine in this disease, with which we are acquainted, was rendered inactive.

From the symptoms on the third day, the time when I saw the patient, and the information which the attending physician gave me, there was every appearance of the brain having suffered more in the first attack than the lungs. A considerable portion of the lungs, as well as the brain, had the appearance of having, in a degree, recovered from the first attack ; but from some unfortunate accident, perhaps from the want of proper agitation being given to the capillaries of the lungs, which probably an emetic might have effected, and excited them to greater action, the torpor continued in these vessels, until they were so gorged with blood as to produce suffocation ; and in the violent efforts which the patient made to inspire, the cells of the bronchia were ruptured, which must have greatly increased the difficulty of inspiration.

Vegetables are organized bodies, similar to animals, but their organization is more simple. They likewise possess contractibility and irritability, or an energy inherent in them, by which their fluids are circulated, in several respects, similar to those of





*Fig 1.*



animals ; and are obnoxious to disease and death, from the same causes in general which affect animals.

PLATE VI.

On the opposite page, is a representation of a leaf of the beech tree.

Fig. 1. Its stem, or spine.

Fig. 2. The ribs, which are 40 in number, 20 on a side.

Fig. 3. Its serrated edge.

Fig. 4. Numerous vessels which arise from the sides of the ribs, (or larger vessels) and branch out similar to arteries and veins, and form anastomoses with those from the opposite rib.

Fig. 5 and 6. Mortified or sphacelated spots, (commonly called rust, mildew, &c.); these spots appear to have been occasioned by drops of dew, or rain, which remained on the leaf during a very cool night, and their sudden evaporation by the air rendered that part of the leaf, which was immediately under these drops, much cooler than any other part ; the sun\* being risen, and shining with an intense heat, causes so great and sudden a vibration of temperature, as to destroy the life of the part, it is evident that all those vessels which pass through the mortified spot in the leaf are obstructed, yet no transudation of fluid has taken place,

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\* "On this principle," says the Rev. Mr. Townsend, "we may account for the destruction of plants, by blight in summer; for unless there be frost at night, there is no blight: and it may be remarked, that the blight does not take place during the action of the frost, but at the rising of a cloudless sun. Hence it is, that our garden crops, such as French beans and peas, which usually suffer most by blight, after a frosty night in summer, suffer no injury, if they are watered immediately before the rising of the sun; because the evaporation abates the heat."

In this country, however, blight often happens after very heavy and cold rains, and in very cold nights attended with heavy dews: after such rains and dews, accompanied with very considerable cold, if the following morning happens to be cloudy or rainy, no blight happens; which corresponds with Mr. Townsend's principle respecting blight, &c.

the circulation being supported by the remaining sound parts of the vessels, by branches which inosculate with other vessels. But when the same thing happens to the naked stalks of wheat, rye, &c. the vessels of which are supposed to run in straight lines parallel with the stalk, the mortified parts are forced by the circulating fluids, and a transudation takes place ; and the grain in the ear being deprived of the nutritious juice, becomes shrivelled. For the immediate cause to take effect which produces this partial mortification or sphacelation, it appears necessary that the whole plant should have a previous predisposition thereto, by suffering, for several preceding hours, from a very low temperature.

It is interesting in these particulars, to notice the wisdom and goodness of Providence, in the production of a spire of wheat. This plant at certain times is capable of sustaining great vicissitudes of temperature, and even frost and snow ; but its stalk is very tender, and any very considerable change of temperature destroys it : to prevent which, in all the cold part of the season, the stalk is covered with several layers of leaves ; as the plant shoots up, each leaf forms a sheath to cover the stalk in succession, beginning at the root : thus the stalk is protected from the cold until about the middle of June ; when from the length of the days, great changes of temperature are less liable to happen than at any other part of the year (and more particularly a low temperature) ; it is then we see the head and stalk mount above the last leaf. But Indian corn, or maize, which frequently has to endure very considerable vicissitudes of weather, even frost, is presented to us in the very reverse. It is not in the early, but latter part of the season, we see its stalk invested with abundant foliage, when the changes of temperature are found to be the greatest experienced in the term of its growth. And herein we have a specimen of the wise provision made for the vegetable world ; in view of which, the devout heart must adopt the

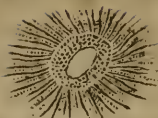
language of the pious Psalmist,—“O Lord, how manifold are thy works! in wisdom hast thou made them all: the earth is full of thy riches.”—Psalm civ. 24.

The phlegmon, or boil, is an inflammation which is very common, and in general its termination is so favorable, that the physician is seldom consulted as to its treatment; of course, its phenomena have been but little attended to. But, as it marks an aberration from health, and in different forms attends diseases of the most mortal kind, viz. the plague, spotted fever, &c. I think its nature and cause ought to be inquired into.



Fig. 1. Represents the most common appearance of a boil in its first stage. The black part stands out pointed, is dry, hard, and sharp to the touch, and gives a sensation to the person who is the subject of it, as though it was a splinter fixed in the part; there is a small prominent circle which stands immediately round this point, and which is sore, and inflamed. About the second or third day, this forms a superficial suppuration, which lies immediately under the cuticle, or scarf skin; this readily breaks, or is rubbed off, and discharges a drop or two of pus; this gives no relief, but the inflammation increases, attended with a throbbing pain, a considerable swelling arises, but is not so prominent as the first; this forms a deeper and more considerable suppuration, the seat of which is in the cellular membrane; when this breaks, there is a perforation, and a fair loss of substance, which is the black point that has sloughed off.

Fig. 4.



Represents the second species of boils. The centre or white spot represents the first stage, which is a small white blister, about the size represented by this figure, and contains a colorless lymph; in a day or two the margin inflames, as is represented by the dotted circle, and a small superficial suppuration takes place, which, in general, does not penetrate to the cellular membrane, but lies between the cutis vera, or true skin, and cuticle: the radiated lines mark the extent of the inflammation.

Fig. 5.



Represents the third species of boils. The circular spot first makes its appearance in a small point not larger than a pin's head; is attended with a sharp stinging pain; it rises prominent and pointed, but this point gradually dilates, and forms a purple blister about the size of this in the figure; this feels hard to the touch, as though its contents were solid; but on being ruptured, it discharges a brownish fluid. The part marked by the parallel lines represents a purplish appearance, which takes place in about twelve hours from the first attack. The part is rather cold, moderately swelled, and sore; but not painful: in about forty-hours from the first attack, the part becomes considerably swollen, and painful; the circulation, which at first was very slow, now appears to have increased, attended with a pulsating, heavy pain; the heat of the part is increased. If the arteries, which are in the neighborhood of the part, be examined, they will be found to throb with more force than usual; the part swells



excessively, becomes very hot and painful, and a thin ichorous matter is continually discharged from the surface of the blister, (which we suppose now to be broken.) These symptoms go on, increasing; until the fourth or fifth day from the attack, at which time we generally observe a superficial suppuration commencing in a small point between the cuticle and cutis vera; which gradually extends until it occupies most of the spot represented by the parallel lines; but gives but little or no relief. In a day or two after, a suppuration is found to have taken place in the cellular membrane, and if the boil is now moderately pressed, the pus will be discharged at several openings; finally, a portion of dead flesh sloughs off, larger in circumference than the original blister, which penetrates through the cellular membrane to the muscular parts.

Is there not a striking similarity between the original dead spot in the boil, and that in the leaf? and if vegetables were capable of sensation and inflammation, must not suppuration and a sloughing away of the dead spot have followed?

### *The Remote Cause of Phlegmonic Inflammation.*

I HAVE seen inflammation and suppuration happen to such parts of swine as were thinly covered with bristles, as the abdomen, extremities, &c. when they have been exposed to great vicissitudes of temperature, by lying in wet places in extreme cold nights, so that the water froze to their skins. Likewise, the udders of cows have been known to sphacelate, inflame, and suppurate, when they have lain on the ground, in very cold and rainy nights, in the months of April and May. On the 6th of September, 1814, after being exposed, for several hours, in a frosty night, which marked a great variation of temperature, and frequently examining the weeds

and grafs as I walked, I was foon after affected with boils on my hands. I have feen feveral instances of perfons fuffering from abfcefles, after working in water with their clothes partially wet, in intemperate weather.\* But, as it happens to plants, the caufe does not appear to take effect, unlefs there is a previous debility in the fyftem. Perfons, laboring under certain difeafes of debility, are affected with boils after the ufe of cantharides.

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### CONCLUSION.

FROM the preceding history of this difeafe it appears, that the prevailing epidemic, in its characteristic form, has not been occafioned by any one vibration of temperature, however great or fudden; but by a feries of changes, which, by breaking down the inherent energy of the capillary fyftem, or deftroying its excitement to a certain degree, caufes the whole or moft part of the population of the place where thefe changes have happened, to have a predifpofition to the difeafe, differing in degree according to their more or lefs expofed fituation, and other accidents—As appears, firft from the countenance of the people refiding where thofe changes

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\* Dr. Beddoes relates the following circumftances refpecting his patient. “ Her constitution was one of thofe, where a fmall irregularity in diet, or expofure to cold, &c. produced pain and diforder in the bowels. The patient having one day occafion to wash fome butter, conceived that by removing her hands occafionally out of the cold fpring water into warm water, fhe fhould have a better chance of efcaping the accuftomed complaint in her bowels; fhe accordingly heated fome water, as hot as fhe could well bear it, and from time to time transferred her arms out of the cold into the hot water, immersing them pretty deeply in the latter. It was on Saturday, in fpring; the next morning, fhe was awakened by violent pain under each axilla, and was likewise fenfible of confiderable fwelling under each axilla; the inflammation continued, and by Tuesday morning the tumors had increafed to the fize of a twopenny loaf each. They foon afterwards broke, and difcharged a large quantity of pus. Thefe circumftances indicate a true phlegmonic inflammation; which, I fuppofe, may be fafely afcribed to the alternate action of heat and cold.”

have happened, which was more or less of a purplish hue, as were likewise their hands and feet—The circulation in the minute vessels of these parts was very slow, and they were colder than they usually are in health, and were often moderately swollen, as was the face—The pupils of their eyes were frequently observed to be dilated, and likewise there was a numbness of the hands, arms, &c.; the pulse at the wrist was often observed to be softer and weaker than in health. In these circumstances, the person is exceedingly sensible to the least change of temperature.

That a single change, or a few variations of temperature, does not produce this disease, appears probable, as it does not necessarily happen to persons who have suffered great changes from casually being exposed, or by several accidental exposures, the immediate effect of which may be equal or superior to our greatest changes of temperature. The changes which happened in 1807 and 1808, did not in this place produce this disease in its characteristic form, though we had two changes, one in March and the other in April, which appear to have been sufficiently great, had the preceding changes been intense enough, and continued for a sufficient time, to have caused that debility of the system which appears necessary for the production of this disease. That the change which happened on the 19th of January, 1800, did not with us produce this disease, though many were severely chilled by it, and a very considerable predisposition was evident in the countenances, &c. of many persons after this great change, or rather these great changes; and had the succeeding winter and spring months been equally favorable for the propagation of this disease, it is highly probable that it would have been frequent, and very fatal.

A few cases, which happened in the spring of this year, apparently from the concurrence of accidents

with the changes of temperature, were uncommonly severe. It does not appear probable, that accidental exposure will readily produce a predisposition to this disease without the concurrence of great atmospheric changes of temperature, (though it is allowed that such artificial means may readily produce this complaint when a predisposition thereto has been previously acquired) because their operation in general is partial, and in many cases is not continued for a sufficient time materially to distinguish the temperature of the system. The operation of such causes is likewise in most cases confined to the outer surface, which appears more readily to accommodate itself to the changes of temperature, than the internal surface, or at least the effect is not so important, while the changes in the atmosphere through the medium of the lungs by operating powerfully on the internal surface of this viscus, and thereby diminishing the temperature\* of the blood in the lungs, and consequently its oxygenation, which must impair the action of the heart : hence the pulse is always soft, generally weak, and often slower than in health, intermittent, and in some instances not perceptible at the wrist even in cases where the patient has afterwards recovered. In cases where the action of the heart is greatly impaired, the purple appearance of the face and extremities is frightfully increased.

That the heat of the system is universally diminished, or of the central parts, I consider to be highly probable; but have not as yet made a sufficient number of experiments to warrant this conclusion. Of two patients, whose temperature I measured by holding a thermometer in the mouth under the tongue for fifteen minutes, I found the temperature in one to be  $96^{\circ}$ , which is  $2^{\circ}$  below the healthy

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\* The temperature of the lungs being diminished, the circulation of the blood in their capillaries must be slower, and its disposition to acquire oxygen less, of course the excitability and irritability of the system in general will be diminished.



standard; in the other it stood at  $98^{\circ}$ , which is the healthy standard; but the disease was moderate. In the first patient, where the temperature under the tongue was  $96^{\circ}$ , the temperature of the left hand was but  $78^{\circ}$ , which is  $20^{\circ}$  below the healthy standard. The hand of the second patient was found to be  $4^{\circ}$  below the healthy standard. As far as I can judge by the sense of feeling, and can recollect, I have uniformly found the extremities, and the surface of the body, except the head, considerably colder than natural, except during the febrile exacerbations, at which times the heat is often greatly increased.

That great and sudden changes of temperature are the remote cause of this disease, appears from its history; and that the same changes are usually the exciting cause of this disorder, appears equally plain.\*

#### *The Proximate Cause.*

From the history of this disease, and dissection, the proximate cause appears to be an extreme torpor of the minute vessels, situated on the external and internal surfaces, (viz. the capillary system) causing congestion in and effusion of blood and lymph from those vessels into the parts adjacent, and likewise an engorgement in the arterial system, congestion of blood in the heart, lungs, &c.; compression and effusion of blood and lymph in the

I would not be understood, that I conceive the changes of temperature to be the only cause which is capable of producing this disease; other causes doubtless do occasionally aggravate the disease; and, in certain circumstances, may even produce a similar state of the system. It has been observed by several very respectable physicians, that damaged corn, scanty provisions, &c. might be the predisposing cause of this disease. But the disease has prevailed in years of great plenty as well as scarcity, and when the fruits of the earth were in great perfection; viz. in 1812. It may likewise be observed, that many families have suffered severely by this disease, who were in no want of the necessaries or comforts of life. So this disorder cannot, with propriety, be called the poor's plague. Though other causes than the vicissitudes of temperature may produce all the varieties of inflammation, yet it appears highly probable, that of all the predisposing causes of inflammatory epidemic diseases, this is by far the most common; and whatever part other causes may have had in producing or aggravating the prevailing disease, yet, from the history of this complaint, it appears, that the vicissitudes of temperature are the great predominating cause.

brain and on its surface; effusion in the cellular texture and bronchial cells of the lungs; effusion in various parts of the cellular membrane, in the tunica conjunctiva of the eyes, &c.; effusion of blood and serum in the intestinal canal and vesica urinaria, producing colic, dysentery, strangury, &c.; eruptions on the skin, in the form of ring worms; miliary eruptions and large irregular blisters, firm and unyielding to the touch, filled with coagulable lymph, boils, vibices, petechiæ, and ecchymosis. The three last never suppurate; but if the patient recovers, they slough off, leaving a foul ulcer with ragged edges, which discharges an ichorous matter, and heals with difficulty. In those subjects, which I have examined after death, there were similar eruptions, affecting the internal membranes, to those which appeared on the external membrane or surface of the body.

The capillary system may be debilitated to a very considerable degree, and no fever happens, if the heart and large arteries are equally or nearly equally debilitated. The face and extremities may be purple, and even a little swollen; but so long as the equilibrium is supported, or very nearly so, although the circulation may be very languid, and the patient weak and very much reduced, yet, as no derangement has taken place in the sanguiferous system, no fever happens. But when, from any cause, the capillary system is debilitated to a considerable degree beyond what the heart and larger arteries are, the blood will be propelled into the capillaries faster than they will be capable of transmitting it into the veins; of course a congestion of blood in these vessels, and their distention thereby, must be the consequence. The circulation of the blood being impeded from the torpor of the capillary system, or the extreme branches of the arterial or venal system, or both, while the large veins return the blood to the heart, (as there is a partial obstruction, in the minute vessels, to the circulation of the blood

from the heart, and larger arteries to the larger veins) there will of course be a congestion of blood in the heart and large arteries, which will in most cases excite them to an increased action; and if the congestion in the capillaries is not removed by the increased action of the heart and arteries, a further swelling of the capillaries must follow, which will increase in the same proportion as the action of the heart and larger arteries exceeds the action of the capillaries; or if the capillaries do not transmit the blood to the veins so fast as it is propelled into them by the heart and larger arteries, they must of course continue to be distended, till their action is excited, (by the pain arising from their distention) and the equilibrium restored, or yield to the distending force and rupture of their coats; and effusion of blood, &c. happen, or a complete cessation of action, and mortification.\*

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\* "In short, inflammation seems to consist in the debility of the capillaries, followed by an increased action of the larger vessels, and is terminated as soon as the capillaries are so far excited, and the larger arteries so far weakened by their excessive action, that the force of the capillaries is in due proportion to the *vis a tergo*. This doctrine we shall find supported by direct experiment, and at once capable of accounting for all the phenomena and causes of inflammation."—See A. Phillips Wilson's *Theory of Inflammation*, Vol. II. *Treatise on Febrile Diseases*, p. 22.

That inflammation is very generally produced by previous debility of the capillary system, and the consequent increased action of the larger vessels, appears to me to be a fact, not only proved by direct experiment, but is what we see in wounds, contusions, &c. where we may plainly observe all the phenomena of inflammation to take place in succession. And though I conceive the above theory in most particulars to be correct, yet in active inflammation there really appears to be an increased action of the capillary system. And I conceive it possible, that inflammation may exist, and even be increased, after the capillaries are excited to increased action, which may be equal or superior to the action of the larger vessels. But to make this idea consistent, we must suppose at least, that there is some obstruction to the free circulation of the blood in the capillaries of the inflamed part: and may not this impediment to the free circulation of the blood in the minute vessels arise from their increased but unequal action, as well as from a diminution of their action? That the capillaries have an action of their own, independent of the action of the heart and larger arteries, is observable from their action being excited by affections of the mind through the influence of the nerves, as is seen in blushing, &c. In the very junction of the arteries with the veins, as

## PART THIRD.



# CATARRHUS :

OR,

Slight Inflammation from Cold,

ATTENDED WITH BUT LITTLE OR NO FEVER.



UNDER this variety of simple inflammation, we shall comprehend slight rheums in the head, creaks in the neck, moderate inflammation of the eyes, slight colds, rheumatic pains, &c. As the internal surface of the nose, fauces, &c. are continually swept by a current of air, it is very natural to suppose that these parts would most frequently suffer from the changes of temperature, as likewise the eyes from their exposed situation, though great provision is made in this organ to prevent a diminution of temperature.

*Symptoms.*—See page 144.

The best method to avoid slight colds, appears to be, to accustom ourselves to the moderate changes of temperature, avoid taking much heating or stimulating drinks or medicine ; exercise in the open air, &c. Slight changes of temperature invigorate and strengthen the constitution.

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the circulation of the blood must depend almost entirely on the muscular contraction of the minute vessels, it is reasonable to suppose, that their power of contraction is proportionally greater in this part than in any other. And may not their contraction in some instances be so considerable as very much to diminish their diameters at this part, and thereby cause a partial obstruction to the free circulation of the blood ? The most effectual mode of treating inflammation really appears to favor the idea of an increased action of the capillaries ; and indeed, we find inflammation to be directly produced by exciting the action of the capillaries, as happens in superficial burns, &c., and may often be readily removed by the judicious application of cold water, or any other application of a similar nature.



*Method of Treatment.*

I WOULD recommend to leave this complaint entirely to nature, except where the patient is of a delicate or phthifical habit. In such cases, I would recommend from half a grain to a grain of emetic tartar, or a dose of radix seneka, to be taken at bedtime, so as to produce slight nausea, and a gentle diaphoresis; if the cough is troublesome, a small pill of opium may be taken at night.—Persons who are of a phthifical habit should avoid changes of temperature, even if they are but slight, with the greatest care, and wear flannel next their skin from December to June.

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*Febris Catarrhalis Major, or active Inflammation from Cold, attended with more or less Fever, arising in general from a local affection of some particular part, as inflammation of the brain, lungs, or side, eyes, &c. or some phlegmonic affection, as boils, abscesses, &c. viz. Phrenitis, Pleuritis, Peripneumonia, Ophthalmia, and Phlegmon, &c.*

SYMPTOMS—Before the commencement of the febrile symptoms, the part is supposed to be colder than natural; the circulation in the capillaries very languid; the first symptom of inflammation, if considerable, is a shivering fit more or less severe; a throbbing, and an increased pulsatory motion is often sensibly felt in the neighborhood of the part in which the inflammation is about to commence. The part soon swells more or less, the heat increases, and pain more or less severe is now felt in it, which increases with the pain and swelling: the part acquires a bright red color; the temperature is considerably increased, and the sensation very acute, if at this time we make an impression on the surface of the part with the point of the finger. The circulation in the capillaries appears to be very considerably increased. The part feels firm, and hard; the pulse

in general is full, strong, and always hard. In some instances, particularly in inflammatory affections of the brain, lungs, &c. the face is moderately swollen, and of a lively red: the extremities appear rather florid, and the blood in the capillaries, as is seen in the lips, and under the nails, &c. appears of a bright, lively red. Even active inflammation is liable to attack persons in very opposite states of health, viz. those of a full and plethoric habit, and such as are demaciated and weak.

A predisposition to inflammation is most commonly produced by great changes of temperature. A partial application of cold is most commonly the exciting cause. To avoid inflammatory affections, we should live temperately, and particularly as respects drink and diet. Great changes of temperature should be avoided with the greatest care. Persons who work in water, or who are otherwise exposed to great vicissitudes of temperature, are very liable to abscesses and other inflammatory affections. The transition should always be gradual from one extreme to the other. Pleurisy, peripneumonia, &c. prevail most commonly in the spring when great vicissitudes of temperature are frequent. Persons subject to these complaints should be peculiarly careful in this season of the year, and at all times when great changes are frequent, not to sit in a current of air, or in the cold, after being heated by exercise, or in sweaty or wet clothes.

There is often a considerable affection of a part from a debilitated action of the capillaries, for a considerable time prior to the accession of active inflammation. The part is rather colder than natural, and often slightly swollen. If nothing further happens to aggravate the complaint, the part may gradually recover its lost tone, and all go well; but if during this period, the person happens to take a violent cold, or from any other cause a febrile action is excited in the system, the whole force of the disease will fall on this debilitated part, as here will

be the least resistance to the circulation ; these vessels will be the first to give way to the distending force of the heart, and larger arteries ; a large proportion of blood, of course, will be forced into the debilitated part : and as there will be more blood, and of course more oxygen in this, than any other similar part, its temperature will be increased : and if the excitability is not far exhausted, its action will be increased ; and if the action of the heart and larger arteries is in due proportion with the action of the capillaries of the debilitated part, in most cases the local inflammation will be removed ; but in some instances, from the action of the capillaries being unequal, or excessive near their junction with the veins, or immediately at their junction, or from some other cause, an impediment arises to the free circulation of the blood in the extreme branches of the arterial or venal system, and a consequent effusion, or distention of the vessels, &c. must follow.

Active inflammation may terminate either by resolution, suppuration, or gangrene.—The most common and the most desirable mode of termination is by resolution. This may be expected to take place when the symptoms have been in moderate, and the action of the heart and larger arteries inconsiderable. When the action of the heart and larger arteries, and likewise the minute vessels of the inflamed part, has been considerable, and this increased action long continued, an effusion of blood and serum is often deposited in the cellular membrane, which, after undergoing a certain change, forms pus : when this happens, the inflammation is said to have terminated in suppuration. When the action of the heart and arteries is excessive, and of long continuance, and the capillaries greatly distended, the parts, from long and great distention, lose their tone ; the circulation becomes first languid, and then entirely stops ; the part of course mortifies, or dies : but the most frequent and worst form of

mortification is, when the heart and large arteries, after long and violent action, suddenly flag ; the capillaries of the inflamed part suddenly being deprived of their accustomed stimulus, their action entirely ceases, and a more dangerous and extensive mortification may be expected.

*Treatment*—To effect resolution, and thereby produce a solution of the disease, is to restore the equilibrium between the heart and larger arteries, and the capillary system. When the action of the heart and larger arteries is in excess, we would restore the equilibrium by reducing the action of the heart and larger arteries by phlebotomy, cathartics, &c. If the action of the minute vessels of the inflamed part is in excess, topical bloodletting, cold application, &c. a solution of saccharum saturni, or even cold water or vinegar, or cloths immersed in water or the above solutions, are much more powerful in allaying the increased action of these vessels, than merely wetting the part. Where the action of the capillaries appears to be deficient, apply blisters—In deep seated inflammations of the thorax, throat, and large joints, blisters uniformly appear to be useful—To promote suppuration, warm applications—In gangrene or mortification, if the action of the heart and larger arteries is impaired, wine, bark, &c. are to be given internally, and stimulating and tonic applications to the verge of the mortified part, in all cases.

In synocha, or inflammatory fever, unattended with local inflammation, the same general principles will apply. When the surface is excessively hot, the patient will experience great relief by having the surface of the body generally washed with cold water or vinegar.



*Febris Catarrhalis Maxima. or Passive Inflammation from Cold in most cases attended with Fever more or less severe, commonly called Spotted Fever, &c.*

THIS fever, in a majority of cases, is attended with some local inflammation; as inflammation of the brain, throat, side, lungs, bowels, extremities, &c.; various eruptions on the skin, as erysipelas, miliary and broad blotches similar to blisters, vibices, petechiæ, ecchymosis, &c.\*

*Symptoms*—Before the commencement of the febrile attack, the temperature of the patient is supposed to be considerably reduced; the circulation in the capillaries is exceeding languid; in general there is a great torpor, which affects the system; all the motions of the body are performed with great languor. It requires all the resolution, fortitude, &c. which the patient can command (in most cases) even to walk or perform the most trifling business; this, in most cases, is not from any weakness of the muscles or limbs; but proceeds from some affection of the nerves, or a want of resolution. There is a great torpor and drowsiness, in most cases, which precede the first attack of this disease. The above symptoms may be considered as only denoting a strong predisposition to the disease. The fever makes its attack with shivering fits, in most cases, extremely severe, and of long continuance; but in some instances this symptom is not so remarkable; yet in all cases there is a considerable diminution of temperature which precedes the first attack. Pain, more or less severe, in the side, head, or extremities, is often the first complaint which the patient makes; in most cases the eyes have a bright glassy appear-

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\* As in a simple cold, so it is likewise in the more violent forms of inflammation, the force of the disease falls on that part which was previously in the greatest state of debility; so likewise in this disease, that part of the system which is most debilitated, is the part which generally suffers most, and is first complained of by the patient; yet, if the debility is great and extensive, other parts may eventually suffer

ance; but in some they are dull, and in all cases they are inexpressive; the countenance in unfavorable cases has an unusual deathish aspect; the circulation of the blood in the capillary vessels, as seen in the extremities, under the nails, and in the lips, is exceedingly flow and languid, except during the greatest febrile paroxysms and heat: there is in general a considerable numbness of one side, or some one of the extremities; they are likewise colder than in most fevers. The extremities in most cases, during the cold stage, have a livid and almost lifeless appearance. The pulse in some cases is full and apparently strong, but never hard; likewise in some instances it is slower than natural, in others it is very quick, weak, and small; in some cases it is not perceptible at the wrist for several minutes; in most cases it is very irregular, and often intermits. "The breathing is often laborious. Distress about the præcordia; also universal agony of the whole system. The tongue is generally covered with a white coat; but in some bilious cases it is of a brownish hue; sometimes it has been observed to have a bloodless appearance," which has been considered as a very unfavorable symptom. In some cases the tongue appears very natural.

To avoid those causes which produce this disease, and thereby escape its attack, or to obviate the effect when the attack is actually made, is a subject so immensely important, that it requires our most serious consideration. But such is the condition of human life, that it is not for us at all times to foresee the dangers to which we are exposed: neither is it in our power always to avoid them, when they are foreseen. The great changes to which this quarter of the globe we inhabit is liable, I have endeavored to substantiate in the preceding pages. So great and extraordinary have been the changes of temperature of late, that not even the hardiest constitution, or those of the most robust habits, have been able to endure those changes which we have suffer-

ed, without receiving material injury. Nor indeed does it appear, that the savage life, in this respect, possesses any advantage over that of civilization. From history it appears, that they have suffered even more severely, as might be expected, since they have not the comfortable lodging, &c. which a people in a state of civilization have ; neither is it likely, that they would pay that attention to provide against those great changes of temperature, which civilized nations do, had they the means.

If the above statements are allowed to be correct, it is certainly an object for every person, who regards his health, carefully to avoid great changes of temperature, by all the means in his power. It is the great extremes only which require our attention. We should avoid being exposed to their violence as far as circumstances will admit ; and when we are obliged to encounter them, we should adapt our dress to the weather, the particulars of which, every person's good sense and experience ought to inform him how to manage.\* We may frequently put on and off great coats, and other outer garments ; but our under garments, such as flannel, &c. which we wear next the skin, ought not to be left off, until the summer or warm season is established.

In general it is the case, prior to the attack of this fever, (see the symptoms of predisposition, page 189) that the person, after being for a considerable time

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\* It appears by Table 13, where the climates of different countries are compared, that the climate of China approaches ours, as respects the extremes of temperature, nearer than that of any other country noticed in the Table.

"The Chinese wear loose garments of different lengths, and increase or diminish the number of them, according to the frequent and sudden changes of their weather ; hence they have very few acute diseases among them. Those inhabitants of Pennsylvania, who have acquired the art of conforming to the changes and extremes of our weather, in dress, diet, and manners, escape most of those acute diseases which are occasioned by the sensible qualities of the air ; and faithful inquiries and observations have proved, that they attain to as great ages, as the same number of people in any part of the world."—  
Dr. Rush's Medical Inquiries, Vol. I. p. 114.

exposed to considerable change of temperature, feels a deep chill, which penetrates his whole body, but is most sensibly felt in the breast, or above the pit of the stomach. He attempts to warm himself by the fire, if he has this convenience ; and though he may warm the outer surface with great difficulty, yet he feels a chill within. His breathing becomes a little affected ; by and by his breathing becomes more difficult ; and although he may breathe nearly as easy as usual, yet he receives not that advantage from it, which we usually do ; but experiences a degree of suffocation, or at least the sensation is similar to that of a slight degree of suffocation from bad air in a crowded room, &c. He is likewise affected by an unusual stupor, which is so great, that in some instances it appears to be almost as much as his life is worth to move. He feels conscious that his situation is far from being safe ; but such is his extreme torpor, that he would hardly stir to save his life : and in these circumstances it is my belief, that many have lost their lives, while with a little attention, had their circumstances have been known, they might probably have been recovered. The breathing becomes more difficult, the pulse slower, and the patient still more torpid. A fulness is felt near the heart, great distress at the stomach, and an engorgement of the great blood-vessels and sinuses of the brain ; great stupor : it is at this time that the pulse, in some instances, is not perceptible at the wrist. It sometimes happens, that apoplexy closes the scene, and the patient dies suddenly.

If the disease does not immediately prove fatal, the accumulation of blood about the heart at last excites it to action, and the patient is roused by a fever-fit more or less violent ; and pain more or less severe in the side, head, or extremities, is often the first complaint that the patient makes. If the action of the heart and larger arteries is considerable, and the torpor of the capillaries great, they are distend-



ed until they yield to the distending force, and hæmorrhage of blood, &c. will happen to that part where the capillaries are in the greatest state of debility, as from the vessels of the nose, throat, lungs, head, in the extremities near the surface of the bones, &c. But should the patient, during the commencement of the stupor, have his feet put in warm water, and warm clothes or heat otherwise applied to the surface of the body, and have his extremities rubbed in some warm stimulating application, as spirit of turpentine and brandy, or red pepper and brandy, &c. ; and warm stimulating applications applied to his hands and feet, as cataplasms of mustard seed, &c. ; and at the same time make use of the most stimulating, warm herb teas that can be procured, as peppermint, snakeroot, &c. ; or essence of peppermint, &c. ; or even warm water given in considerable quantity; it is very probable that he might escape having the disease : yet it will be a considerable time before the patient will fully recover : during which time, he should guard against any considerable change of temperature with the greatest care, and use moderate exercise ; and that exercise which calls the greatest number of muscles into action, is to be preferred, such as walking, &c. ; of all kinds of exercise, riding on horseback, or in a sleigh or carriage, is the worst : he should use a stimulating, but moderate diet, seasoned well with salt, pepper, &c.\* and drink temperately of cider or wine. To eat or drink to excess will produce fever, and in some instances apoplexy, &c. even in those who are not predisposed.

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\* The inhabitants of very cold countries use animal oils, as an important article, both of diet and drink ; and in those countries which are but moderately cool, animal food is eaten much more than in warm countries.

*Treatment of the Epidemic Catarrhal Fever, commonly called Spotted Fever, &c.*

This disease appears to differ from active inflammation, from the predisposing cause being more powerful, and of longer continuance. The difference between active and passive inflammation appears to consist in the following circumstances :\* in active inflammation, the debility is confined almost entirely to the capillary system, while the heart and larger arteries are but little or not at all debilitated, of course the cure consists very considerably in reducing the action of the heart and larger vessels : but in passive inflammation, the heart and larger arteries are materially debilitated, even in the slighter forms of the disease, as appears from the pulse being irregular and intermitting. In active inflammation, the capillaries are soon roused to an increased degree of action, as appears from the heat and redness of the part, the apparent increased velocity of the blood in these vessels, and above all, from their resistance to the impulse of the blood from the heart and larger arteries ;† hence the pulse are hard and tense, which

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\* The three species of boils, page 175, mark two opposite states of inflammation, viz. active and passive. The first denotes active inflammation ; and when it occurs, it is a favorable omen, and is a sure sign that the action of the capillaries is considerable. The second denotes the most favorable grade of passive inflammation ; and to this species belong erysipelas and miliary eruptions, and likewise the effusions of coagulable lymph, in the form of broad blisters, &c. The third species likewise occurs in passive inflammation only, and indicates a great debility of the capillaries, which verge towards complete mortification ; if the swelling lies flat, and its heat and sensibility decrease, and is soft, flabby and purple, we have great reason to dread the event : but if its heat and sensation increase, and it acquires a brighter color, becomes prominent, and suppurates, it is a sure token that the capillaries are recovering from the extreme debility which attended them. To this species belong petechiæ, ecchymosis, and vibices.

† There is a period in the commencement of active inflammation, when the capillaries yield to the impulse of the blood from the larger arteries, and of course they are distended ; but their action appears soon to be excited, which may be equal proportionally or superior to the action of the large vessels ; if this action is equal, i.e. alike in every part of the small vessels, the swelling will be removed ; but if the action of those vessels is unequal, viz. if their action is most powerful

appears to me could not be the case, if the capillaries yielded to the force of the heart and larger arteries.†

If the above principles are correct, the cure in passive inflammation will consist in exciting the action of the capillaries, and in some instances the action of the heart and larger arteries; but as the debility of the heart and arteries is in consequence of the debility of the capillaries, and as no fever can happen unless the equilibrium between the capillaries, heart, and larger arteries, is disturbed, the excess of action will always be that of the heart and larger arteries; and this excess of action, although it may be below the healthy standard, may, notwithstanding, prove to be too strong for the capillaries, in this their extreme state of debility: hence ruptures of the capillary vessels, and hæmorrhage, is a very common occurrence in this disease; and death, in a great majority of cases, (when it happens in this disease) appears to be produced from this cause; of course, in this disease, as in active inflammation, to restore the equilibrium of the capillaries, the heart, and larger arteries, is an important part of the cure. But there are cases in which the action of the heart and larger arteries

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at their junction with the veins, their diameters at this part will of course be more contracted than in any other part, and of course the flow of the blood through them retarded. In these circumstances the more powerful their action is, if the action of the heart and larger arteries is proportionally strong, the greater swelling from effusion or distention must be expected; yet in the above described state of active inflammation, the discharge of but a small quantity of blood from the part, as from the nose, in inflammation of the head, or from an inflamed tumor by cupping, &c. which from its very small quantity we should suppose could have no effect on the heart and larger arteries, will often give immediate relief, all the febrile symptoms immediately ceasing. The same often follows the extraction of a tooth; or if the pain is mitigated by some external application, or if the action of the part be directly diminished by the powerful application of cold, the same effect often follows.

† Tension, as it respects the sanguiferous system, may be compared to the tension of the chords of a musical instrument; the contents of the sanguiferous system and the contraction of its sides are the causes which modify its tone.

is so exceedingly low, that it will not admit of the least reduction ; for which reason we shall consider those different forms of the disease separately.

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*Cases in which the action of the heart and larger arteries, though debilitated, yet admit of a further reduction, with the prospect of thereby restoring the equilibrium ; and the danger of congestion, distention, rupture, and effusion from the capillaries, thereby prevented.*

IF the pulse is not very low or intermitting, or the countenance very much sunk, if the powers of life in general are not exceedingly reduced, we may in most cases conclude that, at the commencement of the hot fit, the action of the heart and larger arteries will admit of a small reduction ; and as this point of time is of vast importance, we should be prepared to reduce their action at the commencement of the febrile exacerbation, or hot fit. But should the propriety of reducing the action of the heart and larger arteries, from any cause, appear doubtful, we had better wait till the commencement of the hot stage, (in some cases the hot stage is not very evident,) or at least till these doubts are removed ; at which time, we may be fulfilling the first indication, viz. to excite the action of the capillaries, and even the heart and larger arteries, if their action is exceedingly reduced.

The action of the heart and larger arteries may be excited by strong cordials, as spirit of lavender, vitriolic æther, spirit of wine, &c. The two last should be diluted, and given in considerable quantity. The internal capillaries, (viz. the internal surface, the stomach, bowels, &c.) by stimulating drink, such as herb teas, peppermint, Virginia snakeroot, common snakeroot, essence of peppermint, spirit of lavender, &c. ; and a blister may be applied to the pit of the stomach. The action of the external cap-



Arteries may be excited, or their action increased by external heat, by the application of warm cloths, by steam from hot bricks, blocks, &c. which have been immersed in water in which the boughs of fir or pine have been boiled, by blisters and rubefacients, as *sp. terebinth* and brandy, *capsicum* or red pepper and brandy, *cantharides* and brandy, by friction with the hand or brush. The excessive action of the heart and larger arteries may be reduced by phlebotomy, cathartics and emetics; yet in a state of the system so delicate as that which attends spotted fever, when life and death appear to depend on different degrees of the same action, and these degrees not very remote, I think the two first remedies are very dangerous, because the action of the heart and arteries is already below the healthy standard; and any further permanent reduction of their action will be a serious disadvantage,\* if it is to any considerable degree; and short of this, no considerable effect will be produced: both venesection and cathartics permanently reduce the action of the heart and arteries, which does not appear to be the case with emetics.†

Emetics appear to possess the peculiar quality of exciting the action of the capillaries, and at the same time they reduce the action of the heart and larger arteries. Of all medicines that I have given in this grade of the disease, emetics appear to be the most valuable. If given in the cold stage, they excite the action of the capillaries; they likewise favor the operation of diaphoretics, which we consider valuable in the commencement of the disease. They likewise appear greatly to moderate the violence of re-action, or the excess of the action of the heart and

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\* The muscular fibre cannot distend itself; hence bleeding and all powerful depleting means must cause a soft pulse to be still softer, and a weak pulse to be still weaker.

† Gentle cathartics, such as castor oil, senna, &c. in such cases as cathartics are indicated, are admissible and very proper. But all powerful refrigerating cathartics, such as Glauber's salt, &c. have uniformly appeared to have a very bad effect.

larger arteries, which may be expected to follow the cold stage. If given in the hot stage, they suppress hæmorrhage of the lungs, &c. they reduce the violent or excessive action of the heart and larger arteries, and thereby moderate the violent pain of the head and other parts. From the facility with which the heart and larger arteries throw the blood to the head, a violent action of the vessels of this part is excited,\* (both of the capillaries and larger vessels) attended with great heat of the part, and extreme pain in such cases; if we omit to remove this extraordinary action but for a short time, the death of the patient will almost always be the consequence. To moderate the pain of the head, emetics, as before observed, by moderating the action of the heart and large arteries, have a valuable effect. But to allay the great heat and violent action of the capillaries, we have powerful means, viz. cold applications: take four or five thicknesses of linen or cotton cloths, sufficiently large to cover the whole forehead, and reach from ear to ear; these should be wet in cold vinegar or water, and applied cold to the forehead, the hair being carefully stroked back.† If the head is very hot, (steam

\* I have often observed, that to oppose the gravity of the blood to the increased action of the heart, by elevating the head, or even for the patient to sit erect, (when he had strength) has a very considerable effect in moderating the impetus of the blood towards the head; and consequently relieves the pain in this part; it likewise favors respiration, and the circulation of the blood through the lungs.

Dr. Blanchard, of Pembroke, informed me, that he found it considerably to moderate the febrile paroxysm, by taking his patients out of bed, during the hot fit; but when they sit up, just before the commencement of the hot fit, it was constantly found to aggravate the next paroxysm from the chill which they took. It is not improbable that both of the above circumstances have a considerable effect.

† It will be remembered, that the hair is a bad conductor of heat, and that it is difficult to wet the head through the hair, even if it is short; and to shave the head during a severe paroxysm of fever would be difficult; besides, we should lose too much time. For the above reasons, I think the forehead to be by far the most suitable part to apply the cold applications; for which reason, I would seldom or never apply a blister to this part; and if I found a blister on the forehead in a severe paroxysm of head-ache, I should recommend to remove it, to make the more powerful applications of cold and wet cloths; saccharum saturni dissolved in the water or vinegar will make its operation more powerful.

will soon rise from the cloth like smoke) the cloth should be removed, and another applied in its room, as often as once in two or three minutes; if the cloths are applied sufficiently often, and if the water is sufficiently cold, they will seldom fail, in a short time, of moderating the heat of the part, and consequently the pain and increased action.

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*Treatment of that grade of Spotted Fever, in which the action of the heart and larger arteries is so low as not to admit of further reduction.*

SYMPTOMS—The pulse is in general small and quick, but in some instances slow and intermitting, but never strong. The extremities, in the cold stage, are generally purple; a cadaverous countenance, and great prostration of strength. In this grade of the disease, emetics are not admissible; if given even to the greatest extent, they never operate well, and in most cases have no operation; but appear to sink the patient still lower.

In this form of the disease, the action of the heart and arteries should be excited by the most stimulating cordials\* and medicines internally; externally, heat and rubefacients should be applied, as described in the preceding grade of the disease: a blister to the nape of the neck; and if there is great distress at the pit of the stomach, or puking, apply a blister and warm applications to that part, while the most warm and stimulating cordials and medicines should be given internally. It will often happen, that after the use of these remedies, for a short time the heart and arteries will be excited to considerable action: if this should appear excessive, or if it should not, yet for the purpose of exciting the action of the capillaries, and the agitation which an

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\* In such cases it has usually been my method, to give the cordials or stimulants in moderate doses, frequently repeated.



emetic gives the system generally, its operation is valuable, in every form of the disease in which it can with safety be administered. Should it now appear that the powers of life are sufficiently restored to admit of the operation of an emetic, one may be given ; but it should be very gentle, such as radix ipecacuanha, r. seneka, &c. and should be given in small doses, frequently repeated, and assisted with warm water, camomile tea, &c. For children, warm water, seneka, and olive oil, with a very small quantity of radix ipecacuanha. If the emetic should not readily operate, a small dose of opium and camphor, or brandy, will often excite the action of the stomach, and cause the emetic to operate. Phlebotomy, cathartics, and all depleting medicines, if carried to any considerable extent, so as materially to reduce the action of the heart and arteries, as might naturally be expected, have uniformly had a very unhappy effect, in all genuine cases of this disease. Salt of nitre, Glauber's salt, and all other powerful internal refrigerating medicines, have uniformly, as far as I have had knowledge of their operation, appeared to have the most baleful effect, when given in any considerable quantity in this disease.

It is possible, that during the hot fit, which in some cases of this fever is extreme, washing the breast, &c. but not the extremities, with good vinegar which is moderately cool, might be agreeable and useful, if used with prudence and caution. From the nature of this disease, the importance of stimulants, both internal and external, is evident, particularly heat externally applied in the cold stage ; and likewise diaphoretics in the cold season of the year, when we have reason to suppose that the cutaneous evacuation has long been in a considerable degree suppressed. In such cases, diaphoretics appear highly beneficial in the commencement of the disease, but should not be forced by violent means, for any considerable time ; nor should the sweating be pro-



fuse, but for a short time, nor suddenly suppressed; a moisture of the skin, or a gentle diaphoresis should be continued for several days. We should likewise take special care to see that the sweating is properly conducted; and enjoin it on the nurse, not to scald or burn the patient, an accident which unfortunately has sometimes happened. We must regulate the temperature of the applications by our own sense of heat and cold. The patient is often so numb, as not to complain, though burnt or scald in some instances to a shocking degree.

Of all medicines, emetics appear to be the most generally efficacious; but it will be understood, that they should never be prescribed in important cases until we have examined the state of the system in the most careful manner, and have good reason to conclude that the action of the heart and arteries, and of the system in general, is sufficiently strong to support their operation. As much of the good effects of emetics depend on their being judiciously prescribed and given, it will in most cases be a desirable object for the physician to tarry and regulate their operation. As the whole population of a place where this disease is prevalent, are supposed to have a predisposition thereto, we readily perceive why all other diseases which may happen during the prevalence of this predisposition, put on the form of the epidemic: this predisposition gradually diminishes during the summer months, and often is scarcely perceptible in the fall, and first winter month; but since the first prevalence of the disease, the system has never so far recovered its tone as to acquire the phlogestic diathesis, or that degree of tone which is favorable to active inflammation, (except in a few solitary cases;) and when the summer and fall months are subject to great vibrations of temperature, as in 1814, the disease has prevailed through the whole year; but has always been much milder \* in the

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\* Except the typhoid petechial fever, (or spotted typhus) which is the most obstinate and difficult disease to treat, of any with which I am

warm season, though the changes were nearly as great as in the cold season: from which it appears, that the changes of temperature are proportionally dangerous as they deviate from the temperature of the blood; e. g. a change of  $40^{\circ}$  above or below  $49^{\circ}$  is borne with less injury to the constitution, than a change of the same number of degrees would be above  $60^{\circ}$  or below  $20^{\circ}$ .\*

As this disease affects different parts of the body, as the head, breast, bowels, extremities, &c. it assumes different appearances, and requires different treatment; for which reason we shall consider each of the varieties of this disease separately. Violent affections of the head may generally be known, by pain and heat in the part, throbbing of the temporal arteries, &c.† *Treatment.*—A blister to the nape of the neck, an emetic, and cold applications to the forehead. After the second or third day, when the violent action of the heart and larger arteries may be

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acquainted. The symptoms are a combination of the symptoms of our former autumnal typhus, (or nervous fever) with those of spotted fever.

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\* “Linnæus, in a paper in the *Amœnitates Academicæ*, expresses his astonishment at the impunity with which the heated Laplander rubs himself with snow, or even rolls in the snow, and drinks the cold snow water.”—*Philosophy of Medicine*, Vol. III. page 104.

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† The same causes which produce a torpor on the surface of the body, often occasion a greater torpor of the capillaries of the lungs. The circulation of the blood, from the right ventricle of the heart, being impeded by the debility of the capillaries of the lungs, a congestion of blood in the right ventricle must be the consequence; and likewise a congestion in the larger veins: the effect of this engorgement in the large veins near the heart, will operate most powerfully on the brain, as the firm bones which incase this part will not admit of its being distended; while the blood from the left ventricle of the heart (from the shortness and greater proportional capacity of the arteries which ascend to the head) will be thrown with greater facility on the brain, than on any other part: hence the violent pulsation of the arteries of the head, the increased capillary action, and the violent pain and great heat of this part. But when the vessels of the lungs are in an extreme state of debility, they often yield to the distending force, and effusion of blood in the cellular texture of the lungs follows in consequence: when this happens, or hæmorrhage into the bronchial cells, &c. the head, as far as I have observed, is uniformly relieved.

expected in most cases to have subsided, blisters may often be advantageously applied to the temples, or behind the ears, or on the forehead.

In a few cases the head is colder than natural, the face pale, the countenance sunk, and the pulse weak and quick.

*Treatment.*—Warm camphorated spirit applied to the forehead and temples, a blister to the nape of the neck; internally, wine and aromatic stimulating medicines.

*Affections of the Throat.*—Of all the parts of the body, the neck is subject to the greatest variety of dress: sometimes it is clothed excessively warm, so as to cause it to sweat profusely; at other times it is very much exposed, or left quite naked. The parts about the mouth, the fauces, and throat, being continually swept by a current of air, we should naturally suppose that these parts, of all others, would most frequently suffer from the changes of temperature; which is the case; of course, affections of the throat, &c. from the several varieties of inflammation, are very numerous. But we shall confine our observations to such affections of the throat, as appear to be different forms of the prevailing epidemic; and even of these there are several varieties. In the most dangerous variety of this disease, the action of the heart and larger arteries is in excess; the attack is often sudden; the face is swollen more or less, is of a dull, pale, or slight purple cast; the eyes are sometimes swollen and suffused with blood; the neck and throat swell excessively; the tongue swells, and is thrust out of the mouth between the teeth; the breathing is more or less difficult; the patient expectorates, or attempts to expectorate a tough, ropy mucus. This disease often proves fatal in a short time, sometimes in a few hours; but in other instances, not till the third, fourth, or even the seventh day. This variety of the complaint most frequently happens in the fall, after great rains, or other very



considerable changes of temperature. I have not had sufficient experience to give my opinion decidedly, respecting the treatment of this variety of the complaint; but, from what I have seen, I would recommend an emetic to be given as soon as possible; and would repeat it, or rather I would recommend repeated emetics given so as to excite a permanent sickness, and considerable and repeated puking: apply a blister to the nape of the neck, and two others, one to each angle of the jaw; and endeavor to procure a free sweat; and give internally red pepper, salt, and flour, *āā*. to be mixed with twenty parts of warm water, and given to the quantity of from thirty to sixty drops to an adult, once in ten or twenty minutes, to be given constantly from the first attack, without regard to the emetic; externally, to the surface of the throat, red pepper and brandy, *sp. terebinth* and brandy, &c. In the milder cases of this complaint, an emetic, a blister to the nape of the neck, red pepper, &c. given internally, and applied externally with brandy. In the other grades of this affection, when the pulse is weak, quick and small, the countenance sunk, and the eyes dull, pain in the head, neck, throat, &c. the neck and throat do not appear swollen, as in the variety of this complaint first mentioned; but a sloughing and ulceration of the mouth and throat, more or less deep and extensive. Most or all of the varieties of this complaint will admit of a gentle emetic being given at the commencement of the complaint; a blister should be applied to the nape of the neck, and red pepper internally and externally, as in the variety of this complaint first mentioned; to which may be added the bark of the root of red willow, given to the quantity of a table spoonful of the decoction once in four hours; and used likewise as a gargle. In some cases, the sloughing extends quite to the stomach, and more frequently to the lungs, ears, nose, &c. In such cases, great attention is requisite, or the patient will sink under



the disease ; very small portions of calomel, opium, and camphor, *āā*. may be given six or eight times a day. When the febrile action is inconsiderable, cortex peru may be given, beginning with very small doses, and gradually increasing them ; red port wine, wine whey, &c. ; the mouth and throat should be washed with a weak solution of vitriol. ceeruleum. Lac ammoniaci may be given internally, to the quantity of from forty to sixty drops, every two hours ; and a decoction of radix seneka should be frequently given, so as to produce a slight nausea.

### *Affections of the Lungs, &c.*

When attended with weak, quick, and small pulse, it is usually the sequel of the last mentioned complaint, and requires a similar treatment. A blister on the upper part of the sternum will be proper, and the last mentioned rubefacients to the surface of the thorax.

The most usual form of pulmonic affection in this disease, is when the action of the heart and larger arteries is in excess. It will readily be perceived, that when great atmospheric changes happen, the lungs, from their necessary exposure in the inhalation of the air, must be peculiarly liable to suffer ; hence the bad effect which a variable climate has on diseased lungs. Affections of the lungs and chest are often very alarming. The disease is known by more or less pain in the side, chest, or a deep seated, dull pain, passing through to the back, difficulty of breathing, and occasionally hæmorrhage from the lungs, and expectoration of bloody mucus, attended with more or less cough ; the pulse is often considerably full, and appears to be strong, but soft. When this disease terminates fatally, death usually happens on the fifth, sixth, or seventh day. The fatal period may generally be foretold by a peculiar rattling, which most commonly may be perceived several hours before death : about the time in which the rattling commences, the patient feels more than

usually composed, and free from pain; his friends often consider him better; but a rattling in the lungs commences from a secondary effusion of lymph in the bronchial cells, which occasionally happens at this time: the patient often makes great exertion to raise the matter from the lungs, and at first often succeeds; but the matter generally increases much faster than it can be raised; besides, it is in most cases exceedingly tough and viscid, so that it adheres to the mouth and throat in a singular manner; the patient's breathing becomes more difficult, and he dies apparently by suffocation.

*Treatment.*—An emetic should be given as soon as possible, if there is hæmorrhage from the lungs. Emetics, in all cases in which I have given them, or heard of their being given, have uniformly appeared to check it: warm applications, such as warm cloths, or warm blocks or bricks covered with cloths, should be applied to the pained part; a free sweat should be procured if possible, and continued for two or three hours; after which, a moderate sweat should be supported for a considerable time, and the skin kept moist throughout the disease: blisters should be applied successively, so that moist of the breast, by the seventh day, may be one common blister. If from the violence of the disease, or habit of the patient, the danger of suffocation is great, an emetic should be given as often as every day, or every other day, so as to produce considerable puking; but the emetics, after the first, should be of the most gentle kind, such as radix ipecac. seneka, &c.; and nauseating doses of antimonials, or ipecac. should be constantly given. If the expectoration from the lungs is considerable, it should be assisted by radix seneka, or scilla; the steam of vinegar, from a tunnel put over a mug filled with hot vinegar, and the spout put between the teeth, so that the steam may be conveyed to the lungs.

This disease, in some instances, terminates by an effusion of blood and lymph in the cellular substance

of the lungs; and if the effusion is not so great as to entirely interrupt respiration, the patient often lingers a long time; and the blood or lymph, if not timely absorbed, produces abscesses, vomica, &c. and occasionally dropsy in the chest, pericardium, &c. When effusion happens to any considerable degree in the cellular texture, or in the bronchial cells of the lungs, the patient's breathing immediately becomes very difficult and laborious; he usually opens the mouth wide, especially when in sleep; the nostrils are considerably inflated; he has a strangled countenance, and it requires his utmost effort to get his breath; the breathing is performed much quicker than usual, and the action of the muscles of respiration are remarkably increased; the pulse is in general irregular, and the heart palpitates.

*Treatment.*—The most desirable event would be to have the effusion absorbed as expeditiously as possible; for which purpose very gentle emetics may frequently be given; but in some cases the patient is so far exhausted, that emetics, though given in large doses, will not operate: if moderate doses of emetics fail to operate, we would conjoin with the emetic calomel, in small doses from 2 to 3 grains, to be given three times a day; and apply blisters to the sternum and sides, or rather we would blister the whole breast in succession; and apply but one, or at most two, at a time: likewise, nauseating doses of emetics, such as radix ipecac. seneka. and lac ammoniaci. If the disease proves obstinate, and does not yield to the above treatment after it has been continued for a considerable time, we would propose the following medicine, viz. extract of stramonium, opium, and camphor, *aa.* to be given in a pill or powder, in small doses, of 4 grains, three times a day, or in such quantities as moderately to affect the system. Port wine and cordials should be given at the same time with the above medicine, if the fever is but moderate, which is generally the case, in such quantities as the circumstances of the case may require: if the



patient is hectic, give cortex peru, and if not, chalybeates. If the effusion should unfortunately terminate in a vomica, the matter being readily expectorated, the patient may recover; if it terminates in an abscess, and becomes prominent, and points towards the surface, it may be advisable to discharge the matter externally by an opening, when a fluctuation can be distinctly perceived.

There is an inexpressible anxiety, which usually attends this affection from its commencement; to relieve which, opiates are very valuable; but great caution is requisite in the use of them, in the commencement of this complaint, as the partial obstruction to the circulation of the blood through the lungs causes a congestion of blood in the vessels of the head, which considerable doses of opium would perhaps aggravate. Notwithstanding the very formidable appearance of this affection, yet if we persevere, and pay that strict and prompt attention to our patient which his distress so imperiously demands, I think we may not unfrequently have the satisfaction to see him recover.

From the pathology of this disease it appears, that the heart and larger vessels for a time sustain the whole weight of the circulation. The heart likewise is the part which is first excited to increased action; and to propel the stagnated blood through the torpid capillaries, in some instances requires an action so extraordinary in these parts, that it is not improbable the great vessels and auricles of the heart in some instances are ruptured, or suffer irreparable injury from their extreme distention. Congestion in, and consequent increased action of, the heart and larger vessels, will probably be attended with a full and strong, but irregular pulse, palpitation of the heart, a sense of fulness and oppression at the heart, difficult respiration, great anxiety, &c.

*Treatment.*—Immerse the hands and feet in warm water; and, as soon as possible, apply the warm bath; or rather envelope the patient in blankets



wrung out of warm water, in which some stimulating herbs have been boiled, or the boughs of fir or pine; and let no time be lost in giving an emetic. Cases occasionally occur, in which the patient gradually sinks.\* This state of the disease is aptly expressed, by saying, that the pulse runs down, as does a watch or clock. Such cases are attended with but little or no fever; the heart fails of being excited, and the patient gradually sinks.

*Symptoms*—The pulse is weak and quick, the countenance sunk and pale, the eyes dull and sunk in their orbits, the surface is generally very cool, and often spotted with large leaden colored spots; the patient generally retains his senses till the last.

*Treatment*—Warm stimulating cordials, given in small quantity at a time, and frequently repeated; † warm stimulating applications to the surface, blisters, and rubifacients.

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\* *As the warm season advances, I have in general observed that stimulating by warm applications, as steam from hot blocks, bricks, &c. becomes less necessary; and in cases where the action of the heart is greatly impaired, attended with a small weak pulse, faintness, and sinking, I should at all seasons prefer warm, dry applications, as flannel, blankets, &c. In all cases, the patient's feelings should be consulted. When the patient is extremely cold and shivering, heat is highly agreeable and useful; but when he is excessively hot, or very faint, a great degree of heat may not only be disagreeable, but very injurious.*

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† *From the nature of this disease, particularly in such cases as are attended with an apparent diminution of temperature, purple extremities, &c. and the known properties of oxygen gas, (viz. pure dephlogisticated vital air) the probability has often occurred to me, that the inhalation of this air might be peculiarly beneficial; but from the difficulty of procuring it, and of its administration as a medicine, I have been prevented from making experiments, except in the two following cases.*

*Monday, June 27, 1814. Gave oxygen gas to Miss ----; measured her temperature before inspiring it, and found it to be 96° in the mouth under the tongue, and 78° in her left*

When this disease affects the diaphragm, it may be known, in most instances, by hiccough, difficult respiration, &c. Apply a blister opposite to this part; rubifacients, such as camphor and opium, &c.; externally and internally give nauseating doses of emetics, and small doses of opium and camphor frequently repeated. When the capillary system is greatly debilitated, and the cutaneous perspiration greatly suppressed for a long time by extreme cold, the countenance of the patient laboring under this disease often becomes yellow; probably from the torpor of the vessels of the liver, and the extreme branches of the vena portæ, though the abdominal viscera appears to suffer much less than any other internal parts; yet when the debilitating cause or causes have long operated, it is reasonable to suppose that their effects will ultimately reach this part. When cold has been applied to the abdomen in those who are predisposed to the prevailing epidemic, it produces the disease in the form of colic, and other affections of the stomach and bowels; as dysentery, bilious diarrhoea, &c. This disease has, in some instances,

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*hand—Fahrenheit's scale. The time of holding the thermometer in the mouth or hand was 15 minutes: in half an hour after the first inspiration of this air, the mercury in the thermometer rose in her left hand, in 10 minutes, to 86°, and under the tongue, in 5 minutes, to 97½°. On the 28th, measured the temperature of her left hand, and found it to be 82¾°; after breathing two bottles of oxygen gas, (which was in about one hour, by breathing this air for three minutes at a time once in about twenty minutes) in one hour and a half from the commencement of her breathing it, I measured the temperature of her left hand, and found it to have risen to 89°. Each time after breathing this gas, her eyes appeared much brighter, her countenance and lips became of a livid red, and assumed a healthier aspect; but she complained of being too hot, threw off the bed clothes, and said that she wished to be thrown into a brook. After this, her recovery was rapid.*

*The other case was but moderate; but the effects were similar.*

produced effusion, and even suppuration, in the liver.

*Symptoms*—In affections of the stomach and bowels, pain similar to the colic, dysentery, cholera morbus, &c.

*Treatment*—Warm stimulating cordials, opium, æther, and camphor, given in small doses, frequently repeated. If the bowels are obstructed, gentle cathartics; as oleum ricini, aloes, &c. In bilious diarrhœa, give opiates and clysters, composed of yest and a small quantity of opium; and the same general external treatment as in the more perfect forms of this fever. When the liver is affected, pain and swelling of the right side. *Treatment*—Apply a blister over the pained part; give calomel in small doses; and make the general external applications as in other cases of fever: if the effusion resists this treatment for a considerable time, apply mercurial ointment to the region of the liver; if the swelling becomes prominent, and points towards the surface, apply warm poultices; and when a fluctuation can be distinctly perceived, discharge the matter by an opening. When the force of the disease falls on the extremities, we shall generally find, on inquiry, that these parts have somehow been peculiarly exposed, or from some previous disease weakened. I have known several instances, in which this disease has affected recent incised wounds, to an alarming degree. But as the warm season advances, the extremities are much more liable to be attacked by this complaint; this is peculiarly the case after the middle of May. Does this happen, because the extremities are the last to be recovered from that state of debility which predisposes to the disease? or is it because children, and not unfrequently grown people, are accustomed to leave off their winter dress about this time, viz. their outer garments, stockings and shoes, &c.? In cases where the force of the disease falls on the extremities, the action of



the heart and arteries is always in excess; for which reason, we should give nauseating doses of emetics; and if the febrile action is considerably attended with pain in the head, we would recommend full puking, and all the general internal and external medicines, as in other cases of fever. The pain in the extremities is often very severe; blisters and warm applications, such as flannel cloths wrung out of warm water, in which the small branches of *fir* have been boiled, in general give the most relief. The acute pain experienced in this disease, is doubtless caused by the distention of the capillaries, which in general lie deep in immediate contact with the periosteum. These vessels are often ruptured, and blood and lymph are effused sometimes in such quantity as to occupy the whole limb; and it is not unfrequent that there is acute pain in the joints, and considerable swelling, which has the appearance of being occasioned by an effusion within the capsular ligaments; but this rarely terminates in suppuration; the effusion in most cases is absorbed. But when the same happens on the cylindrical bones, the effused matter lies between the periosteum and muscles: this affection often terminates in suppuration, and produces ulcers difficult to heal. I never knew the bones to be primarily affected; but when matter has lain for a considerable time in contact with the periosteum, they are often eroded.

When the effusion has long resisted the repeated applications of blisters, mercurial ointment, *sp. ter-ebinth*, *oleum succinum*, &c. it may be proper to suspend their use, and apply warm dry flannel cloths, and occasionally a linen cloth, wet in a spiritous solution of camphor and opium, and applied as warm as can be conveniently borne. If the effusion is slight, it will generally yield to the above treatment; but a considerable degree of swelling and pain often continues for a long time; and in some instances the affected part continues swelled to an enormous degree, is cold, soft, and œdematious;



but in some instances it acquires a remarkable degree of hardness ; and in both cases the circulation is extremely languid. In the above cases, I have found a weak solution of corrosive sublimate, in water, (viz. four grains to a pint of water) applied as a wash every third day, and a flannel bandage, to answer a valuable purpose. In most cases, the bandage should be continued from the points of the fingers or toes to two or three inches above the tumor or swelling ; the bandage should be of the softest and best of flannel, and applied moderately tight ; at first it should be removed three times a day, and the swelling gently rubbed with the hand, or a soft brush ; great care is necessary in the application of the bandage—it should press equally on all parts of the limb. If there should be an appearance of active inflammation in any part of the swelling, after using the bandage, we should discontinue the use of the wash, and apply a fine linen rag, wet in a solution of *sach. saturni*, to the inflamed part ; but in most cases continue the bandage.

In affections of the joints, we would first apply blisters, in succession, all round the joint, for a considerable time ; and when the pain has considerably abated, apply the bandage, and continue the application of the blisters, just below the joint. If the effusion terminates in suppuration, or if a fluctuation can be distinctly perceived, and the matter is not re-absorbed in the course of a few days, it should be discharged by an opening.

If we consider the extensive surface of these ulcers, and the very low state of inflammation which attends them, as the parts which form the surface of these ulcers have approached near an entire cessation of action, it is not reasonable to suppose that they will afford healthy granulations ; some few of these collections, on being opened, have discharged a well digested pus ; but even these usually heal with difficulty : the greater part which I have seen, have discharged more or less of a bloody sanies, and more

particularly after the first dressing ; and several have discharged bloody serum and pus, nearly equal parts : when the matter was first evacuated, these last have uniformly proved very difficult to heal, when they were extensive, if not closed nearly by the first intention.

Of late, my treatment, in all the above collections of matter, has been to discharge it as soon as a fluctuation could be distinctly perceived ; except in a few instances of a peculiar kind of huffy tumor, which occasionally occurs in this disease on the surface of the flat bones, as the cranium, sternum, &c. which appears to be a deposition of blood and lymph : its absorption has generally been affected by the application of blisters, and other stimulants ; likewise collections within the capsular ligaments, and on their outer surface, have generally been absorbed by similar applications, and the use of a bandage ; but in some instances these last have proved very obstinate.

In affections of the limbs, the matter in some instances extends from joint to joint ; yet the fluctuation is usually more perceptible in some particular place than elsewhere ; and tho' the whole limb is often affected, and collections of matter surround both the tibia and femur, yet the matter does not often pass the joint. In discharging these collections, I have found it very advantageous to have the limb supported by an assistant, while another, by a proper application of his hands to the swelling, forces the matter to the most safe and depending part of the limb, or as much so as practicable. I have usually made the opening to discharge such collections with an abscess lancet ; but in some cases, from the sloughing of the membranes, there is such a collection of films, that a considerable opening is absolutely necessary for their discharge ; but the smaller the orifice, provided the matter can be discharged, the better. After the matter is discharged as completely

as possible, a flannel bandage should be applied, in such a manner as to force any matter, that may yet remain, out at the opening. The sides of the ulcer, being in this manner brought into contact, there is a chance of their adhering. Very extensive ulcers have been healed by the above method, in some instances, in the course of three days; but this is not usually the case: the healing of such ulcers, in general, is only progressive, the extreme parts first adhering, and thus gradually diminishing the cavity of the ulcer, till it is wholly obliterated. But it is obvious, that in these cases very particular attention is necessary in applying the bandage; and in some instances we must make use of bolsters, to fill the vacancies between the tendons, muscles, &c. The opening should be no larger than merely to admit of the free discharge of the matter. For the first two or three dressings, it may be proper to preserve the orifice from closing, by a small tent, of such size as can be easily introduced; and after the first or second dressing, the discharge from the ulcer will generally prevent the orifice from closing. The dressings should be applied as often as twice or three times a day; and if there should be a slight adhesion of the sides of the orifice, it may be easily separated with the probe. But should we occasionally be under the necessity of dilating the tumor a second or even a third time, it appears to me it should be preferred to the method of making a large opening, and admitting the air to the surface of the ulcer; the consequence of which is a profuse discharge of matter, and hectic fever, which often sink the patient; but under either mode of treatment, there is often a succession of abscesses; and the muscles, in some instances adhere to the bones, throughout their whole extent, which is a very serious inconvenience. Bark, wine, chalybeates, &c. should in most instances be given internally, and such other medicines as are customary in the cure of bad conditioned ulcers.

In the more superficial effusions, which often terminate in abscesses, no peculiarity of treatment is necessary, except that they require more stimulating applications than those tumors which are attended with active inflammation.





**DIRECTIONS FOR PLACING THE PLATES.**

**Plate 1, to face page 154.**

**Plate 2, to face page 160.**

**Plate 3, to face page 165.**

**Plate 4 and 5, of the heart and liver, to face page  
166.**

**Plate 6, to face page 173.**

The first of these is the fact that the  
 system of taxation is not uniform  
 throughout the country. In some  
 parts the tax is very high, while in  
 others it is very low. This is a  
 great disadvantage, as it tends to  
 create a feeling of inequality  
 among the people. It also tends to  
 discourage the people from  
 paying their taxes, as they feel  
 that they are being treated  
 unfairly. This is a very serious  
 problem, and it is one that  
 must be solved if the country  
 is to progress. The second of  
 these is the fact that the  
 system of taxation is not  
 based on the ability to pay. In  
 some parts the tax is very high,  
 while in others it is very low.  
 This is a great disadvantage, as it  
 tends to create a feeling of  
 inequality among the people. It  
 also tends to discourage the  
 people from paying their taxes,  
 as they feel that they are being  
 treated unfairly. This is a very  
 serious problem, and it is one  
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 country is to progress. The third  
 of these is the fact that the  
 system of taxation is not based  
 on the principle of justice. In  
 some parts the tax is very high,  
 while in others it is very low.  
 This is a great disadvantage, as  
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 serious problem, and it is one  
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 country is to progress.

## ERRATA.

*Note.*—In printing the Tables, as the page was not sufficiently large to contain all the figures, it was necessary to leave out part of the decimals and words, which occasioned several errors.

Page 37, Table 2. Result, in mean temperature of the days, and of the nights, and their difference : for 53,2—36,8 : read 57,2—36,0.

Page 41, Table 3. Result : for 52.8—41 9—11,3 : read 52,5—40.9—11.6.——Diseases for February : for cynocha, read cynanche ; for cholic, read cholera.

Page 66, Table 5. Result : for 31.4—19.1 : read 35 5—15.1. Diseases should be two figures higher than their opposites.

Page 71, Table 6. Result : for 52,3—41,3—11,6 : read 52,4—41,2—11,2.

Page 75, Table 7. Diseases for February : for hydortha, read hydarthrus.

Page 93, Table 10. The blanks should be filled by 53.8—39,3—14,5.——Direction of the winds in July, should be 2 days south, and 5 days west ; and the Result, 47—20.——Diseases in September, for typhoid fever, read typhoid spotted fever.

Page 101, Table 12. Mean annual greatest variation in 24 hours : for 41,6 : read 45 5.——Direction of the winds : for 182,1—32,1—23,8—45,2—24,7—27,2—37 5—4 7 : read 181,25—32,25—24,0—32,75—25,125—27,5—37,625—4,75

Page 132, Table 14. Feb. 3, (Salisbury warmest) for 4, read 2.

Page 135, Table 15. Village 5 warmest, on the 19th March, should be a blank.

Page 8, line 13, for phlemonic, read phlegmonic.  
22, last sentence, on scarlatina anginosa, should be separated by “

32, line 21, for October 8, read October 9.

38, line 4, for mean variation, read mean greatest variation.—Line 1 in note, for 26th of Feb. read 14th.

43, line 3, for mition, read mitior.

59, line 22, for causes, read causus.

67, line 7, for when, read where.

98, line 5, for November was, read November is.

115, last line, for waters, read winters.

141, line 6, for erysipelatos. read erysipelatos.

186, line 10, for demaciated, read emaciated.

198, line 3, in the note, for paroxism, read paroxysm.





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